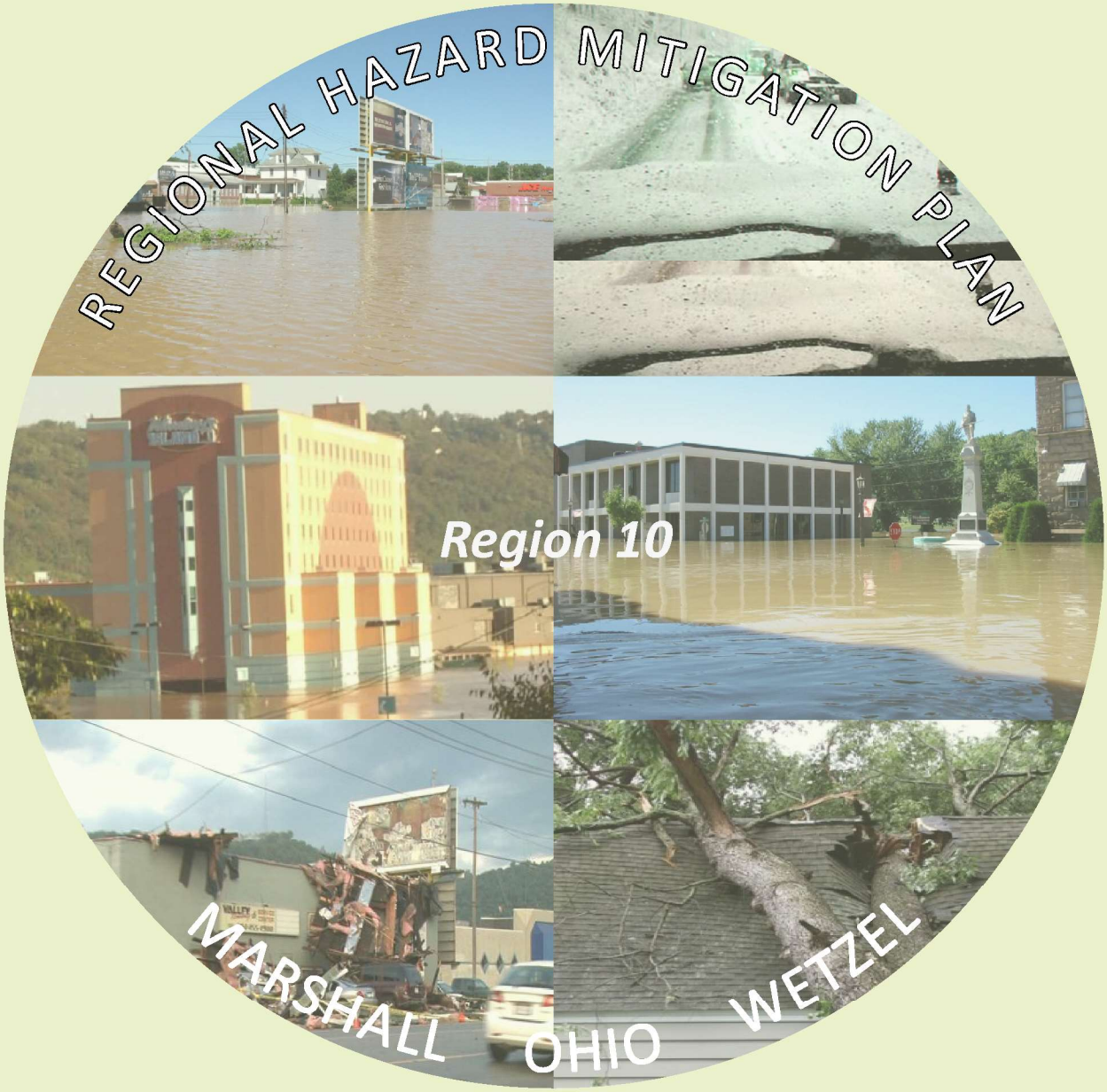

DRAFT

Prepared by
Belomar Regional Council
Wheeling, WV

December, 2016

MARSHALL, OHIO, AND WETZEL COUNTIES
REGIONAL HAZARD MITIGATION PLAN

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CHAPTER 1.0 INTRODUCTION

Disaster Mitigation Act (DMA) 2000 (Public Law 106-390) provides the legal basis for FEMA mitigation planning requirements for State, and local governments as a condition of mitigation grant assistance. DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by repealing the previous mitigation planning provisions and replacing them with a new set of requirements that emphasize the need for State and local entities to closely coordinate mitigation planning and implementation efforts. The requirement for a State mitigation plan is continued as a condition of disaster assistance, adding incentives for increased coordination and integration of mitigation activities at the State level through the establishment of requirements for two different levels of state plans. DMA 2000 also established a new requirement for local mitigation plans and authorized up to 7 percent of HMGP funds available to a State for the development of State and local mitigation plans.

This plan is the regional plan for all local jurisdictions in the region comprising of Marshall, Ohio and Wetzel counties. The region is also known as West Virginia Region X. Belomar Regional Council is the designated planning and development agency for the Region X.

The very first Hazard Mitigation Plan for the Belomar Regional Council was prepared by the JHC Consulting of Buckhannon, WV. This plan served its purpose and is due to expire in December, 2016. The plan update is required every five years. Prior to initiating this update, a meeting of Emergency Management Agency directors for each county was arranged by Belomar to discuss the overall approach for the update. It was felt that plan should be developed locally with the input from local stakeholders.

This update of the Regional Hazard Mitigation Plan is developed using a transparent planning process involving all stakeholders including local cities, villages, county governments, emergency management personnel and other stakeholders. The purpose of this plan is to identify potential hazards that may threaten the region; increase awareness and preparedness; and develop strategies to mitigate the effects of each hazard.

In preparing this plan a literature review was conducted and several documents were reviewed. The 2013 West Virginia Statewide Standard Hazard Mitigation Plan Update prepared by the Division of Homeland Security, 2016 Hazard Mitigation Plan for the Mid-Ohio Valley prepared by Mid-Ohio Valley Regional Council, Belmont County Multi-Jurisdictional Hazard Mitigation Plan prepared for the Belmont County Ohio, Brooke Hancock and Jefferson Counties Hazard Mitigation Plan prepared by the JHC Consulting of Buckhannon, WV and the Long Range Transportation Plan for 2040 prepared by the Belomar Regional Council were some of the documents reviewed and incorporated as needed in this plan.

The plan is organized in five chapters starting with the documentation of the planning process in chapter one.

1.1 THE PLANNING PROCESS

The planning process used is transparent, participatory and inclusive. Several opportunities for input and comments were provided at various stages of the plan development. A steering committee consisting of key county EMA personnel was created and played an active role in the plan update. A list of steering committee members is included in the Appendices. An early public participation was solicited by placing display advertisements in the local newspapers and initiating a survey. A copy of the early involvement notice is included in this chapter. An online survey form was developed to seek local perception, awareness and preparedness. Hardcopies of this survey and a survey drop box were also placed in local libraries. Availability of the survey was announced in the display advertisements, agency website and Facebook page. Local jurisdictions were encouraged to get the word out too. The copy of the survey questionnaire and display advertisement is included in the Appendix A.

The early participation effort generated 13 responses from the public. Responses were received from each county. The results were tabulated and are presented in Chapter 2 of this report. Goals and Objectives from the previous plan were modified as needed and were approved by the steering committee and sent to the local jurisdictions for review and comments.

Available hazard mitigation plans from neighboring jurisdictions were obtained and the 2013 West Virginia Statewide Standard Hazard Mitigation Update was downloaded. These documents, along with other publications and papers on this subject, were reviewed as part of a literature review.

A hazard profile for each potential hazard was prepared and a steering committee meeting was held for review and comments. Input was provided and incorporated. The steering committee also went over the mitigation strategies included in the currently adopted plan and the recommendations for improvement provided by the reviewing agencies. The strategies were modified as needed and sent to all local jurisdictions for review and comments. Local jurisdictions were asked to provide the status of each plan project in their jurisdiction; provide any new projects since the previous plan and assign priority to each project. Previously identified projects and the input received from the local jurisdictions are used to prepare the list of projects in each jurisdiction.

The recommendations for improvement previously provided are considered in this plan update cycle. The recommendations and response to each recommendation is included in Appendix B.

In addition to selecting mitigation strategies and projects, each jurisdiction also assigned priority to each project. Goals and objectives associated with each project were identified. Performance measures were also identified for the selected projects. The purpose of the performance measures is to monitor progress towards meeting goals and objectives of this plan.

After all projects were tabulated, the steering committee was asked to review the projects and performance measures. The input received was incorporated in the first draft of the plan. A public notice was placed in local newspapers announcing the availability of the draft document and opportunity to comment. This public notice is included in Appendix A. In addition, the policy board, consisting of local elected and appointed officials, was updated on the status of the plan during the regularly scheduled meetings. They were also encouraged to get the word out and provide input.

The draft document was placed on the website and Facebook page and was also available at local libraries. In addition, the draft document was also made available to the neighboring jurisdictions. Comments could be provided via regular mail, e-mail, on Facebook or at open houses. Three open houses, one in each county, were held. Other than the input received from survey respondents in the beginning, no new comments were received. Display boards prepared for the open house and sign-in sheets are included in Appendix A.

EARLY PUBLIC PARTICIPATION DISPLAY ADVERTISEMENT

PUBLIC NOTICE

Belomar Regional Council is in the process of updating the Marshall, Ohio and Wetzel Counties Multi-Jurisdictional Hazard Mitigation Plan. Hazard mitigation plans are required by the Disaster Mitigation Act of 2000. (DMA 2000: Public Law (PL) 106-390). The law reinforced the importance of mitigation planning, emphasizing planning before disasters occur.

The purpose of the 5 year plan update is to identify potential hazards, associated risks and actions for mitigation. As part of the planning process, we are seeking your input. Please complete a brief online survey and let us know your opinions on natural hazards and mitigation by April 8, 2016.

To complete the survey, please go to: http://www.belomar.org/regional-hazard-mitigation-plan-survey or surveys will be available at the following public libraries:

Moundsville-Marshall County Public Library, 700 Fifth Street, Moundsville, WV
Ohio County Public Library, 52 Sixteenth Street, Wheeling, WV
New Martinsville Public Library, 160 Washington Street, New Martinsville, WV

After review and approval by the West Virginia Division of Homeland Security and Emergency Management (WVDHSEM) and Federal Emergency Management (FEMA), the final plan will be adopted by each jurisdiction.

1.2 REGIONAL PROFILE

West Virginia has eleven regional planning and development councils. These regional councils were formed pursuant to West Virginia Code Chapter 8, Article 25, which states "… problems of growth and development so transcend the boundary lines of governmental units that no single unit can plan for the solution of these problems without affecting other units of government; that intergovernmental cooperation on a regional basis is an effective method to approach common planning and development problems and to seek more efficient and economical solutions to common problems of local government…"

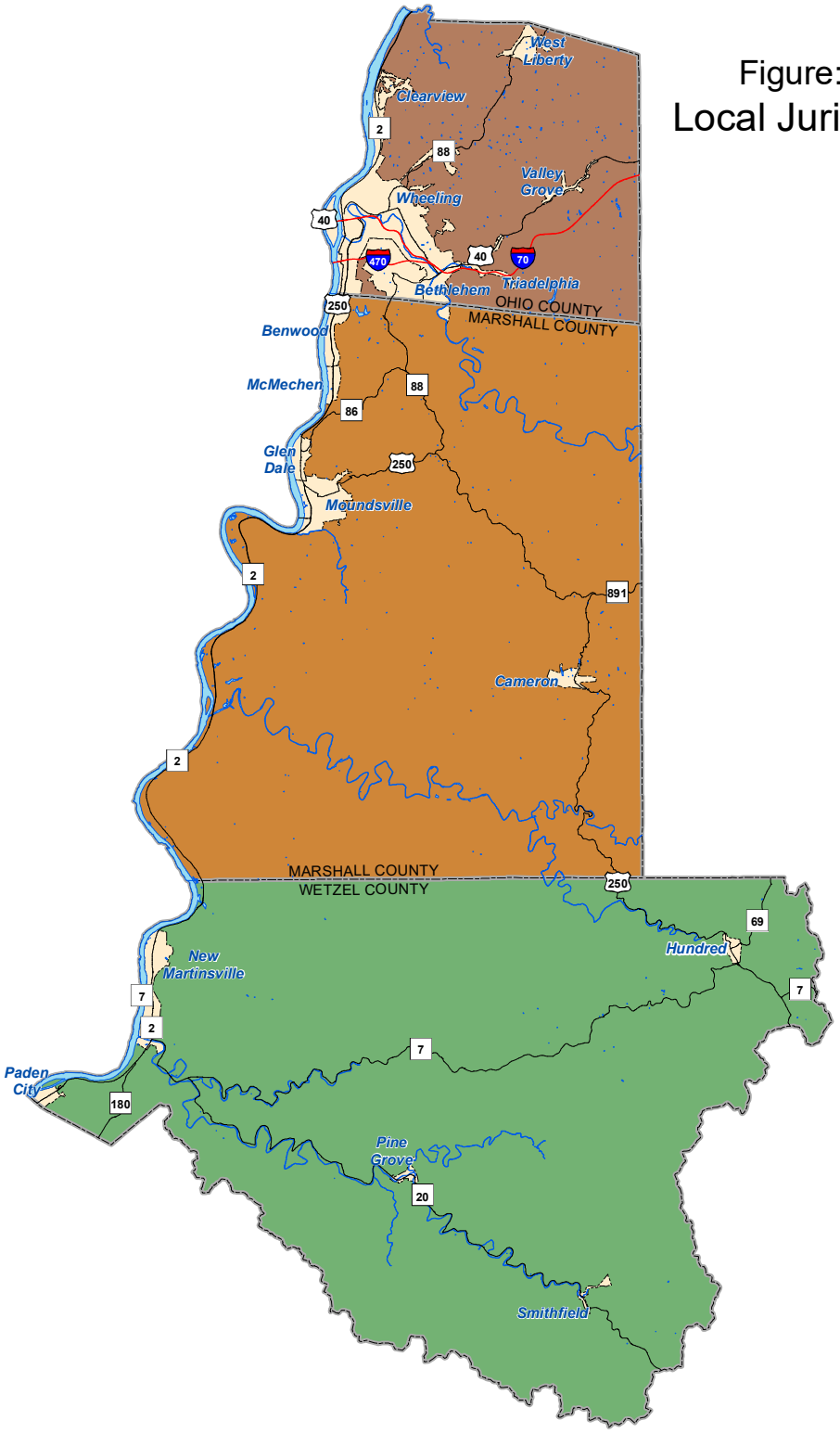
Natural hazards and catastrophic events transcend local jurisdictional boundaries and need regional approach for planning and resource utilization. The planning area for the Region X Planning and Development Council consists of Ohio, Marshall and Wetzel Counties, and a regional planning approach is used for this plan.

The planning area for this plan consists of 19 local jurisdictions, as shown in Figure 1.2.1. There are 16 municipalities within the three counties. The three counties are located in the northern panhandle of West Virginia, between Ohio and Pennsylvania, with the Ohio River forming the western border. Table 1.2.1 below lists these participating governments.

TABLE 1.2.1
LIST OF LOCAL GOVERNMENTS

Name	Jurisdiction	County
Benwood	City	Marshall
Bethlehem	Village	Ohio
Cameron	City	Marshall
Clearview	Village	Ohio
Glen Dale	City	Marshall
Hundred	Town	Wetzel
Marshall County	County	Marshall
McMechen	City	Marshall
Moundsville	City	Marshall
New Martinsville	City	Wetzel
Ohio County	County	Ohio
Paden City	City	Wetzel
Pine Grove	Town	Wetzel
Smithfield	Town	Wetzel
Triadelphia	Town	Ohio
Valley Grove	Village	Ohio
West Liberty	Town	Ohio
Wetzel County	County	Wetzel
Wheeling	City	Ohio

Figure: 1.2.1
Local Jurisdictions



TRANSPORTATION

The transportation network in the area includes four (4)-lane divided highways, two (2)-lane roadways, and single-lane roadways. In addition to the roadways, the area's transportation network includes transit systems, an intermodal facility, an active railroad line, navigable Ohio River, and small public and private airports. The roadway network is consistent with the mountainous terrain, meaning many roads are winding and include steep grades. The primary transportation routes in the planning area are as follows:

- Interstate 70
- Interstate 470
- U.S. Route 40
- U.S. Route 250
- West Virginia Route 2 (WV 2)

The secondary routes in the area are as follows:

- WV 7
- WV 20
- WV 86
- WV 88
- WV 180
- WV 891

Interstates 70 and 470 run east-west through Ohio County, with I-470 serving as a Wheeling Bypass. I-70 runs through the City of Wheeling and passes through a tunnel that takes it down to one (1) lane in each direction. U.S. Routes 40 and 250 are mainly categorized as principal arterials, and provide access mostly in the east-west direction through the planning area. U.S. 40 (National Rd.) runs in Ohio County, connected from across the Ohio River and running northeast to Pennsylvania. U.S. 250 runs southeastward from Moundsville to Marion County. WV Route 2 runs parallel to the Ohio River through the area, and varies from two (2) to four (4) lanes. It runs through all three (3) county seats; New Martinsville, Moundsville, and Wheeling. WV 2 and the interstates see the highest traffic volumes including trucks carrying hazardous materials. Due to the intense hydraulic fracturing activity, the volume of hazmat vehicles have also increased on local roads.

ECONOMY

In all three (3) counties, the economy is driven by government and trade, transportation and utilities. Other trends are somewhat more difficult to determine. The region's growing natural gas industry and continued coal mining can account for the natural resources and mining being high in Marshall County. The high rank of education and health services in Ohio County is not surprising, given

the fact that Wheeling Jesuit University, West Virginia Northern Community College, and West Liberty University are all located here. The trade, transportation and utilities industry includes retail trade, transportation and warehousing; with the Highlands and many other retail stores in the area, as well as the added transportation for the natural gas industry, it makes sense that this category ranked high in all three (3) counties. Table 1.2.2 shows the top four (4) industries of each county, along with the number of individuals employed by each.

TABLE 1.2.2

TOP INDUSTRIES BY COUNTY

County	Industry 1 Name (#)	Industry 2 Name (#)	Industry 3 Name (#)	Industry 4 Name (#)
Marshall	Natural Resources & Mining (1,926)	Trade, Transportation & Utilities (1,861)	Government (1,827)	Education & Health Services (1,451)
Ohio	Education & Health Services (7,005)	Trade, Transportation and Utilities (5,543)	Professional & Business Services (3,798)	Government (3,769)
Wetzel	Government (1,160)	Trade, Transportation & Utilities (1,106)	Leisure & Hospitality (577)	Education & Health Services (484)

Source: WV Bureau of Employment Programs, 2015

The three (3) counties all have some room for development, see "Analyzing Development Trends" below. All counties have Economic Development Authorities (EDAs) that work to bring development and jobs to the area. The top employers, by jurisdiction, are as follows (Source: WV Bureau of Employment Programs):

- Marshall County
  - Marshall County Coal Company/Murray Energy
  - Marshall County Board of Education
  - Ohio County Coal Company/Murray Energy
  - Eagle Natrium
  - Reynolds Memorial Hospital
- Ohio County
  - Wheeling Hospital
  - Ohio County Board of Education
  - Ohio Valley Medical Center
  - Cabela's Wholesale
  - Wheeling Park Commission/Wheeling Island Hotel, Casino and Racetrack

- Wetzel County
    - Wetzel County Board of Education
    - Wal-Mart
    - Wetzel County Hospital
    - Northwood Health Systems
    - Litman Excavating

CLIMATE

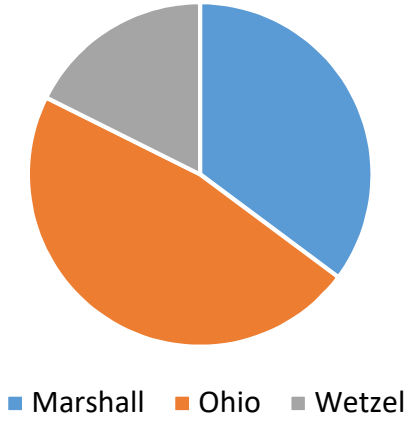
The climate of the planning area is generally a hot humid continental climate that is influenced by air that has crossed over central United States. The region falls in the Dfa Köppen climate classification, which is a humid continental climate with the warmest month average above 71.6°F. Summers are warm to hot and winters are cold, but not severe. The plant hardiness zones (determined by the U.S. Department of Agriculture) range from 5b in some western sections of Wetzel County to 6b along western Ohio County, with the majority of the three (3) counties being in zone 6a. These zones are based on the average minimum winter temperatures, and the planning area zones range from -15° F to 0° F.

Average winter temperatures range from a low of 19°F in Wetzel County to 21°F in Marshall County and 22°F in Ohio County. July temperatures have an average high around 84°F for the region. Annual precipitation ranges within the low to mid 40" area; Ohio County sees 40", Marshall County averages 42", and Wetzel County can expect a little more precipitation with almost 46" on average (*Source: The Weather Channel*). The total planning area receives an average of 22" of snow fall per year (*Source: USA.com*).

POPULATION

The population of the planning area is 94,133 according to the 2010 Census. Figure 1.2.2 shows the breakdown by county. The majority of the population tends to be located on the western portions of the region, along the Ohio River. This is not surprising given the flatter, more developable land along the Ohio River and the opportunities for waterborne commerce.

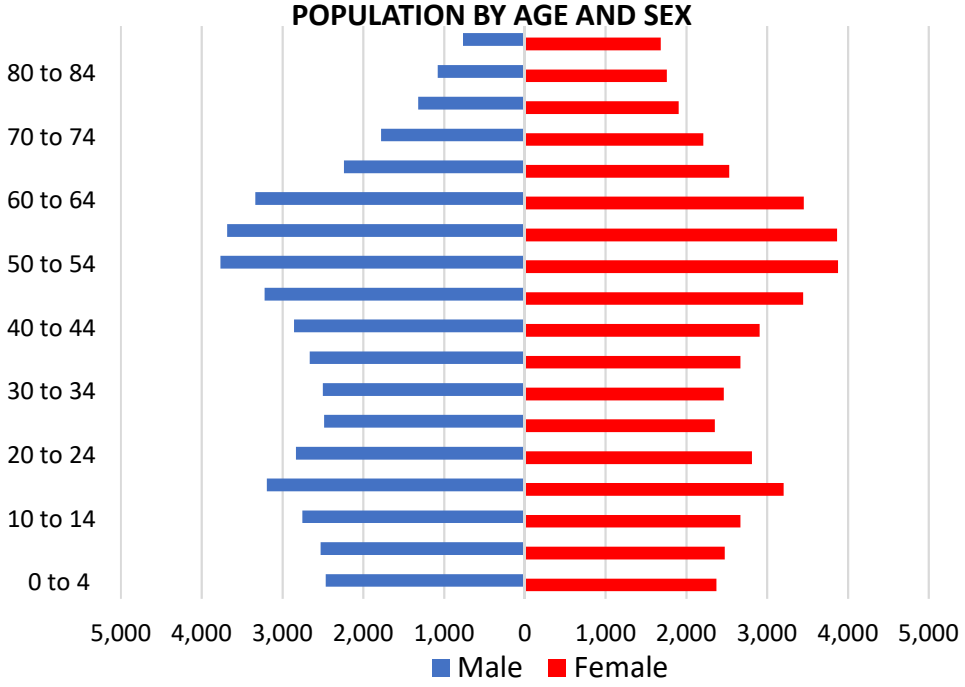
FIGURE 1.2.2
AREA POPULATION



Source: US 2010 Census

The composition of the population, broken down by age and sex, is shown in Figure 1.2.3 below. The overall population is 48% male and 52% female. As can be seen, a large portion of the population is in the 50 to 64 years old range, with 23.4% of the population. For comparison, the State of West Virginia has only 11% in the 50 to 64 age range. The region's aging population presents new challenges and opportunities for the area.

FIGURE 1.2.3
POPULATION BY AGE AND SEX



Source: US 2010 Census Data

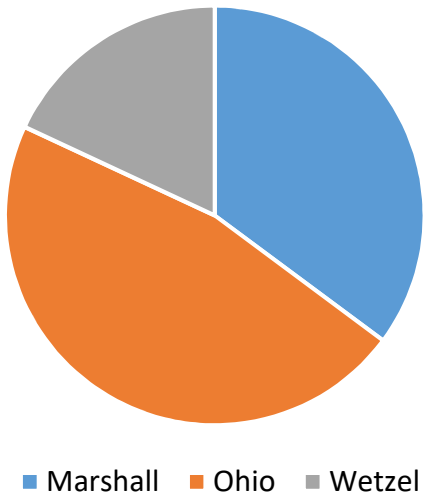
A majority of the population lives within a municipality, this accounts for 62% (58,412) of the total population. Also, a significant portion of Ohio County's population, 71.5%, lies along the river in Wheeling, and in the towns of Triadelphia and Bethlehem. Almost half of the population (47%) resides in Ohio County, which makes sense as Wheeling is the largest city in the area.

HOUSING

As expected, the number of housing units closely matches the population distribution of the planning area. Overall, there are 45,263 housing units in the area, although only 39,751 are occupied units. The majority, 63%, of residents own their homes. The average median housing value for the region is $84,967.

Figure 1.2.4 shows the distribution of housing in the region, it can be seen that this figure is almost identical to the population distribution figure on the previous page. Table 1.2.3 offers a more detailed breakdown of the planning area's housing units.

FIGURE 1.2.4
HOUSING



Source: US 2010 Census

TABLE 1.2.3

Demographic	Marshall	Ohio	Wetzel
Housing Units	15,918	21,172	8,173
Owner Occupied	10,588	12,697	5,408
Renter Occupied	3,281	6,217	1,560
Ownership Rate	66.5%	60.0%	66.2%
Median Value*	$77,900	$94,800	$82,200

Source: US 2010 Census Data

*ACS 2010 Estimates based on 2006-2010 data

UTILITIES

Utilities in the planning area are provided by many different companies. Electricity is provided by FirstEnergy's Monongahela Power (Mon Power) in Wetzel County; and Appalachian Electric Power (AEP) in Marshall and Ohio Counties. Internet, Phone and TV services are provided by Comcast, Frontier Communications, StratusWave (no TV service), Lumos Networks, and Suddenlink (parts of Wetzel County). Cell phone service is provided by Verizon, AT&T, Sprint, US Cellular, etc. Gas is primarily provided by Mountaineer Gas Company.

Water and wastewater services are provided in a few different ways. Most municipalities provide water service which is supplemented, primarily in unincorporated areas, by Public Service Districts (PSDs). PSDs are public corporations that help extend water and sewage services to rural areas. However, many residents still rely on private water wells and septic tanks throughout the region. Public sewer service is generally provided through the larger municipalities in the area.

1.3 ANALYZING DEVELOPMENT TRENDS: CURRENT AND FUTURE LAND USE

The difficult terrain of the planning area has resulted in most development being in the valleys along the Ohio River and WV Route 2. Following the national trend, developments have been moving away from the Central Business Districts (CBDs), and fanning out to the suburbs. This move is best seen through the continued growth of The Highlands on I-70 in Ohio County. The commercial area surrounding the Cabelas, built in 2004, has grown rapidly in the years since then and continues to see the most opportunity for growth in the area. Due to topographical constraints, many new developments have occurred along ridgetops and on moderate slopes. Most of the industrial developments have occurred along WV 2 and the Ohio River. However, in recent years some power plants have been shut down, due to environmental regulations and the coal industry continues to decline. Generally, denser residential development is likely to continue to occur near municipalities and along roadways. Wheeling CBD has begun a resurgence with the addition of new housing for young professionals and relocation of a major health insurance provider.

There are a number of recreational opportunities in the planning area. Marshall County has extensively developed Grand View Park, and Ohio County has Oglebay Park, which includes a resort, golf courses, Good Zoo, and the popular winter attraction, the Festival of Lights. The retired West Virginia State Penitentiary in Marshall County and the nearby Grave Creek Mound and Museum serve as tourist attractions. All three (3) counties have an annual County Fair that provides a great summer and fall attraction. Multiple events are held at the Heritage Port in Wheeling.

The local jurisdictions do not have land use plans. A digital land use map is not available for any jurisdiction in the region. The Regional Council staff has initiated the development of land use layer for use within a Geographic Information System (GIS). This layer is being developed from the available digital parcel data and will be ready by the next plan update.

The following is a brief breakdown of areas targeted for development throughout the planning area.

Marshall County:

Marshall County's Ohio River waterfront will probably continue to be an attraction for industrial development. Companies such as Eagle Natrium, Blue Racer Midstream and Covestro show the potential for industrial facilities along the Ohio River, and the area could see new companies and possibly the expansion of these existing companies. Representatives from existing industries serve on the Marshall-Wetzel Local Emergency Planning Committee, which allows company and community officials to share information as it pertains to the potential hazards those facilities may face. The northern portions of the county should also benefit from the continued growth of the Wheeling area. The opening of a new cracker plant in Shadyside, Ohio will have an impact on Marshall County.

Ohio County:

The Highlands along I-70 just east of Wheeling is the primary location targeted for development. It would primarily be susceptible to hazardous material incidents, winter storms, severe wind and possible land subsidence. Downtown Wheeling is also a possible location for future development. Recently, a major health insurer, The Health Plan, announced it will move headquarters to downtown Wheeling. Older buildings are being converted into apartments in an effort to draw more people to live downtown, which could bring businesses to the downtown area. Also, local groups, such as Reinvent Wheeling, and Wheeling Heritage Corporation have worked to provide a much needed uplift to the downtown area and continue to work on bringing economic development to the area. The City of Wheeling is also working to address development expected due to the proposed cracker plant.

Wetzel County:

Most of the development is expected to occur in the West Virginia Route 2 Corridor.

Wetzel County is within a 70-mile radius of the proposed cracker plant in Shadyside, Ohio. It is assumed that a sizeable portion of the workforce will come from this area.

The natural gas and oil industry has grown rapidly across West Virginia, and the Northern Panhandle is a major focal point of that development. All three (3) counties are seeing significant growth in the more rural eastern portions of the counties. These areas are not only remote, they are served by infrastructure systems that were not designed to see the amount of heavy truck traffic associated with these industries. The topography in these rural areas is rugged, with steep grades and winding roads. Accessing many of these areas can be difficult, especially in the winter or bad weather. There are concerns about the hydraulic fracturing process that include foul smell, ground water contamination, air pollution, orphaned wells, increased truck traffic and road deterioration, well fires, fracking waste disposal and potential for earthquakes.

CHAPTER 2.0 HAZARD IDENTIFICATION AND RISK ASSESSMENT

A hazard is an event or physical condition that has the potential to cause property damage, loss of life, injuries, disrupts mobility, and businesses, damages infrastructure, crops and environment or inflicts the property damage or loss of life some other way. It is important to first identify hazards that an area may be exposed to. Next an understanding of the area's vulnerability to each hazard is needed before potential risk from each hazard is determined.

2.1 HAZARD IDENTIFICATION

All potential hazards that an area may be vulnerable to are identified in Table 2.1.1. This table was prepared for the previous plan and includes how each hazard was identified and why it is a candidate for further analysis. After reviewing this table, a public survey was conducted. The purpose of the survey was to seek input and feedback on potential hazards, perceived frequency and local preparedness for each hazard. The hazard identification facilitates vulnerability assessment at each jurisdiction level. Its purpose is to identify all potential hazards that could affect the region; assess the extent of each hazard and prioritize risks for developing mitigation strategies and projects.

All hazards to which the region is most vulnerable were identified and included in a public outreach survey conducted by Belomar. A questionnaire is included in Appendix A. The results of this survey are presented in Figure 2.1.1 through 2.1.5.

Almost 90% of respondents were most concerned about flooding, followed by weather related events such as severe wind, thunderstorms, and winter storms. Hazardous material related incidence is also ranked high with over 70% of the respondents indicating they were concerned. Over 50% of respondents are also concerned about land subsidence and terrorism.

Drought, wildfires, tornadoes and earthquakes are of concern to only less than 30% of respondents.

Most respondents are concerned about weather related events because they have experienced these. It is important because weather related events are more frequent and widespread. It is not surprising that most respondents feel weather related events are likely to happen in the future. Over 60% respondents also feel that hazardous material incidents are likely in the future. Approximately one third of respondents indicated that land subsidence and terrorism incidents are likely in the future. The local concern about land subsidence is due to the active and abandoned coal mines and hydraulic fracturing in the region.

TABLE 2.1.1
REGIONAL HAZARDS

HAZARD	HOW IDENTIFIED	WHY IDENTIFIED
Avalanche	● Research indicates that these jurisdictions are not susceptible to this hazard.	● The general contour of the land in the region is mountainous, but they are not steep enough to cause avalanche activity. ● Further, the amount of snowfall the region receives is insufficient for any kind of avalanche.
Coastal Erosion	● Google Maps	● Coastal erosion is not a significant risk as the region is more than 400 miles from the Atlantic Ocean.
Coastal Storm	● Google Maps	● Coastal storms are not a threat to the region as it is more than 400 miles from the Atlantic Ocean.
Dam Failure	● WV Department of Environmental Protection (WVDEP) Dam Safety ● Interviews w/Local Officials ● US Army Corps of Engineers Dam Safety	● The Benwood flood wall is in need of mitigation efforts. ● Ohio County contains the Pike Island Lock and Dam facility. ● Wetzel County contains the Hannibal Lock and Dam facility.
Debris Flow	● See "Land Subsidence"	● See "Land Subsidence"
Drought	● National Climatic Data Center (NCDC) Event Records	● NCDC reports following two (2) drought events for each county through 2016.
Earthquake	● US Geological Survey (USGS) ● Internet Research (www.earthquake.gov)	● The USGS rates the planning area as having a 4 to 12%g Peak Ground Acceleration (PGA). ● According to the USGS rates the counties in Region range from a 2 to 4 in Peak Ground Acceleration (PGA) with a 10% change of exceedance in 50 years. ● While perceived shaking is expected to be light and damage minimal, USDHS Federal Emergency Management Agency (FEMA) still recommends analyzing hazards in areas with these PGAs.
Expansive Soils	● See "Land Subsidence"	● See "Land Subsidence"
Extreme Heat	● NCDC Event Records	● Temperatures in the region seldom exceed 100 degrees. ● If the temperature meets or exceeds 100 degrees, it has not been hot enough for the amount of time appropriate to denote "extreme heat".

HAZARD	HOW IDENTIFIED	WHY IDENTIFIED
Flooding	● NCDC Event Records ● Public Outreach	● NCDC reports the following: ◦ Marshall-62 since 1996 ◦ Ohio-31 since 1996 ◦ Wetzel-36 since 1996 ● Local officials unanimously indicated that flooding was the most probable hazard in all jurisdictions.
Hailstorm	● NCDC Event Records	● NCDC reports the following: ◦ Marshall-34 events since 1990 ◦ Ohio 22 events since 1990 ◦ Wetzel -24 events since 1990
Hazmat Incident	● Local knowledge ● Transportation Plan for 2040 ● Interviews with local officials ● PHMSA: Incidence Report Database	● State Route 2 sees a high volume of hazardous material traffic. ● Interstates 70 and 470 see high volumes of hazardous materials traffic. ● All 3 counties could be impacted by an emergency at industrial facilities along the Ohio River. ● Natural gas operations have increased the amounts of materials such as hydrochloric acid and liquid nitrogen on rural roadways. ◦ Marshall-13 events ◦ Ohio-8 events ◦ Wetzel-3 events
Hurricane	● See "Thunderstorm"	● The region does not experience the hurricane conditions of extremely high winds, rains, and hail. ● In some instances the region may be affected by rainfall brought about by the remnants of a hurricane, which are addressed elsewhere.
Land Subsidence	● West Virginia Geological and Economic Survey (WVGES) ● West Virginia Department of Environmental Protection (WVDEP)	● Wetzel County is located in "high risk" area according to USGS Landslide Overview Map. ● Landslides are frequent occurrences along SR2 in Marshall County. ● According to local officials, land subsidence occurs as a secondary result to other hazards and development.
Landslide	See "Land Subsidence"	See "Land Subsidence"
Terrorism	● Interviews w/Local Officials	
Thunderstorm	● NCDC Event Records	● NCDC reports the following: ◦ Marshall-123 thunderstorms since 1969 ◦ Ohio-109 thunderstorms since 1969 ◦ Wetzel-64 thunderstorms since 1969
Tsunami	● Google Maps	● The Atlantic Ocean is approximately 450 miles from the region ● The Appalachian Mountains will most likely protect the area from a Tsunami affecting the US east coast.
Volcano	● USGS	● No volcanos exist on the east coast.

HAZARD	HOW IDENTIFIED	WHY IDENTIFIED
Wildfire	[● Interviews w/Local Officials]	● [Local firefighters respond to a number of "brush fires" in any given year. ● Local officials have become concerned about the number of natural gas well fires in the planning area; in rural areas, these well fires could spark a wildfire.
Wind	● NCDC Event Records	● NCDC reports the following: ◦ Marshall-11 high wind events since 1996; 2 tornadoes since 1998 ◦ Ohio-17 high wind events since 1996; 2 tornadoes since 1961 ◦ Wetzel-8 high wind events since 2001; 1 tornado in 1996
Winter Event*	● NCDC Event Records	● NCDC reports the following: ◦ Marshall-25 events since 1996 ◦ Ohio-30 events since 1996 ◦ Wetzel-24 events since 1996

* Includes extreme cold/heavy snow/ice storm/winter weather and winter storm.

Almost 90% of respondents have smoke alarms in their homes and over 70% have had family conversations regarding action to take during a natural disaster or other emergency. However, less than 50% of respondents have prepared a disaster kit, learned CPR, sought or received information on natural disasters and emergencies or created utility shutoff procedures. On the positive side, over 60% of respondents have prepared a family emergency plan.

Most respondents feel that the local jurisdictions are least prepared for drought, earthquake, land subsidence, terrorism, and wildfires and most prepared for weather related natural disasters including severe storms and flooding. Over 25% of respondents felt that the local jurisdictions were prepared for hazardous material incidences. The survey results are consistent with exposure. Most people in the region have experienced weather related natural disasters and it is reflected in the survey response.

The three counties of the northern panhandle of West Virginia cover 770 square miles. The terrain also includes valleys and the Appalachian Mountains. The development has occurred mostly in the valleys and on ridgetops. Due to the vast expanse and varied terrain, the vulnerability to hazards also varies. Valleys are more prone to flooding, while low population densities on the eastern side of the region, on generally hilly terrain, may be more prone to high winds and more severe winter events.

The population densities also vary significantly from 419 persons per square miles in Ohio County to only 46 persons per square miles in Wetzel County. Due to these variations, the hazard risks also vary throughout the region.

FIGURE 2.1.1

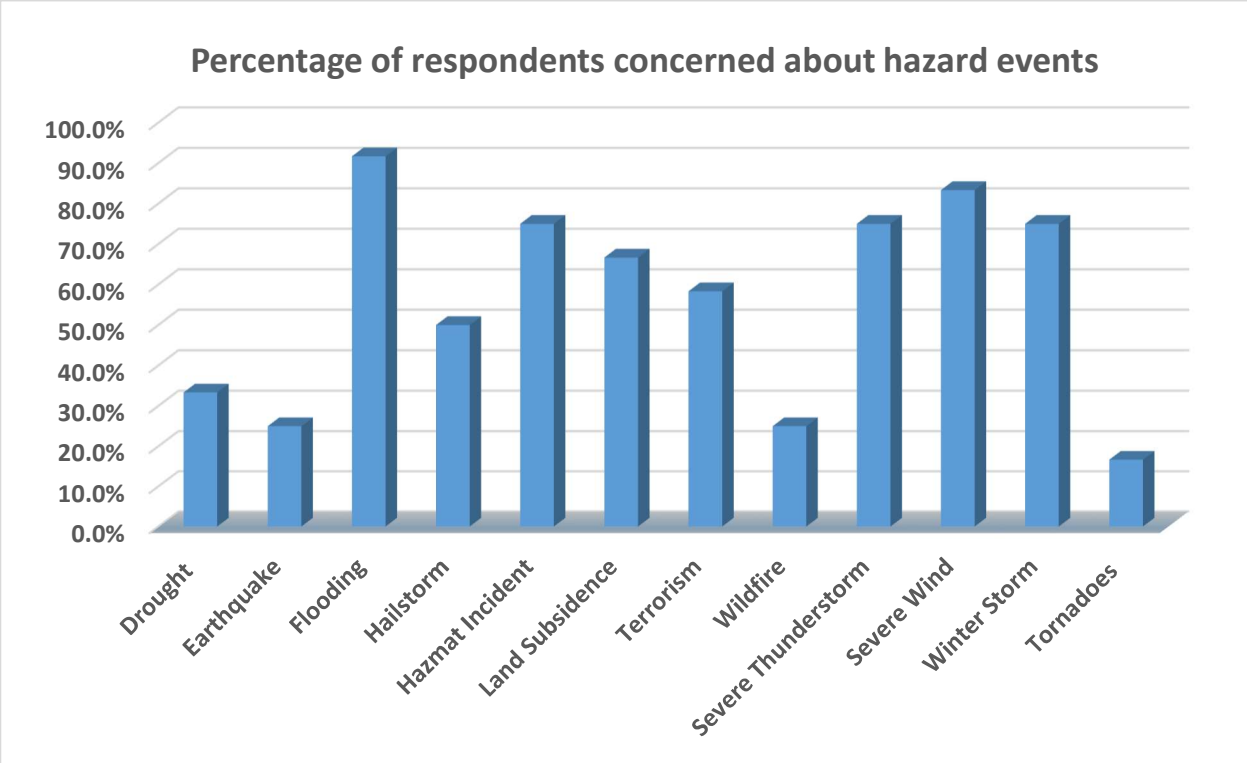


FIGURE 2.1.2

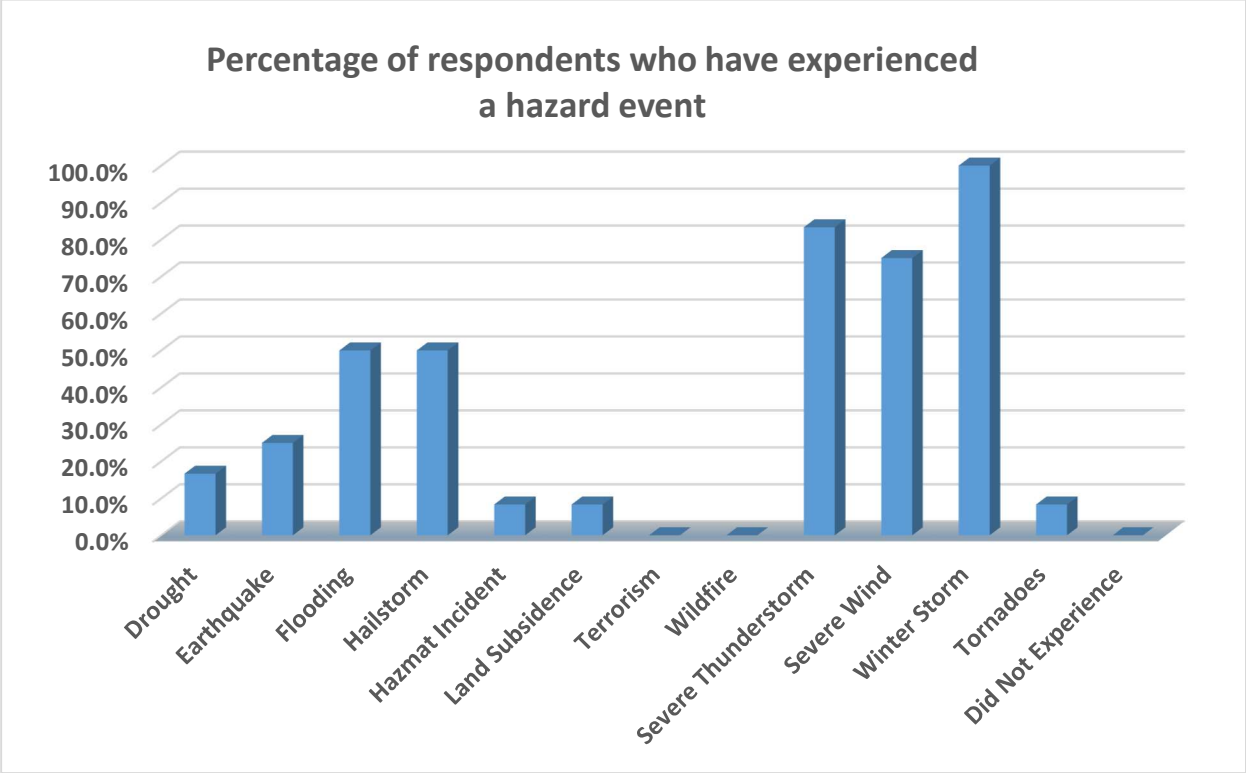


FIGURE 2.1.3

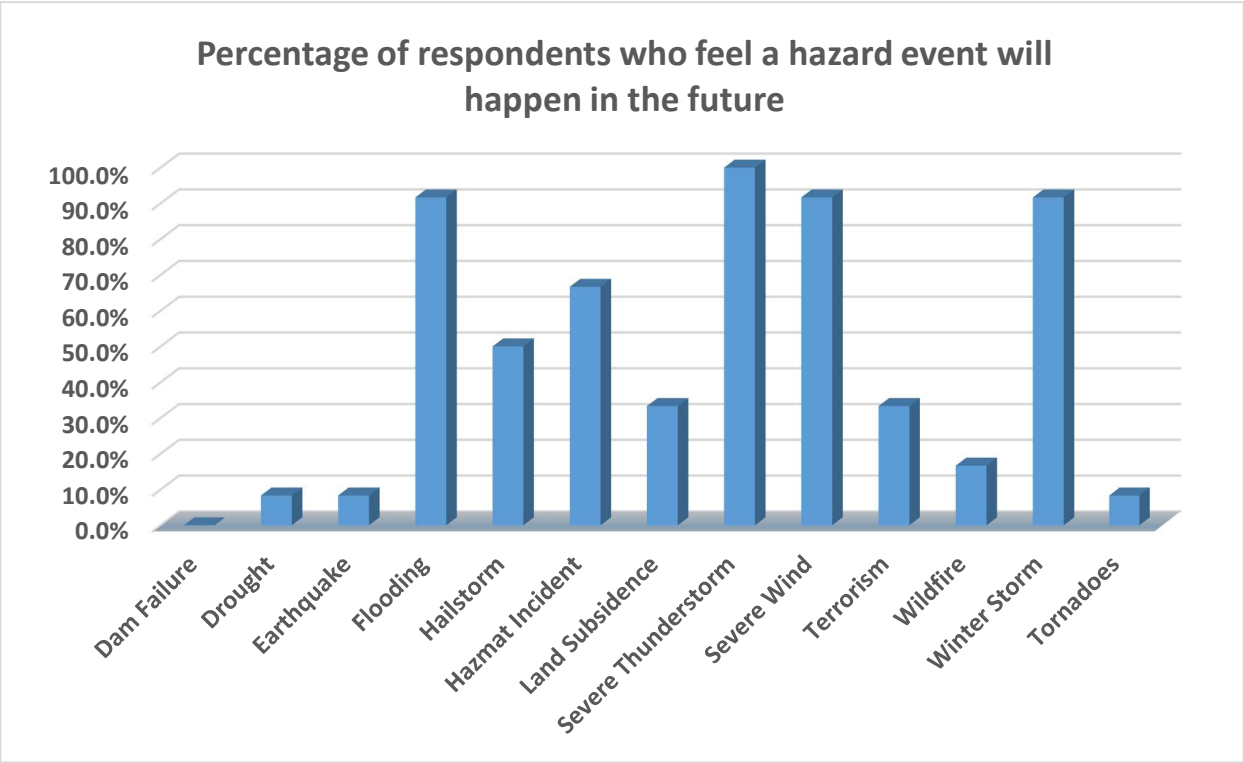


FIGURE 2.1.4

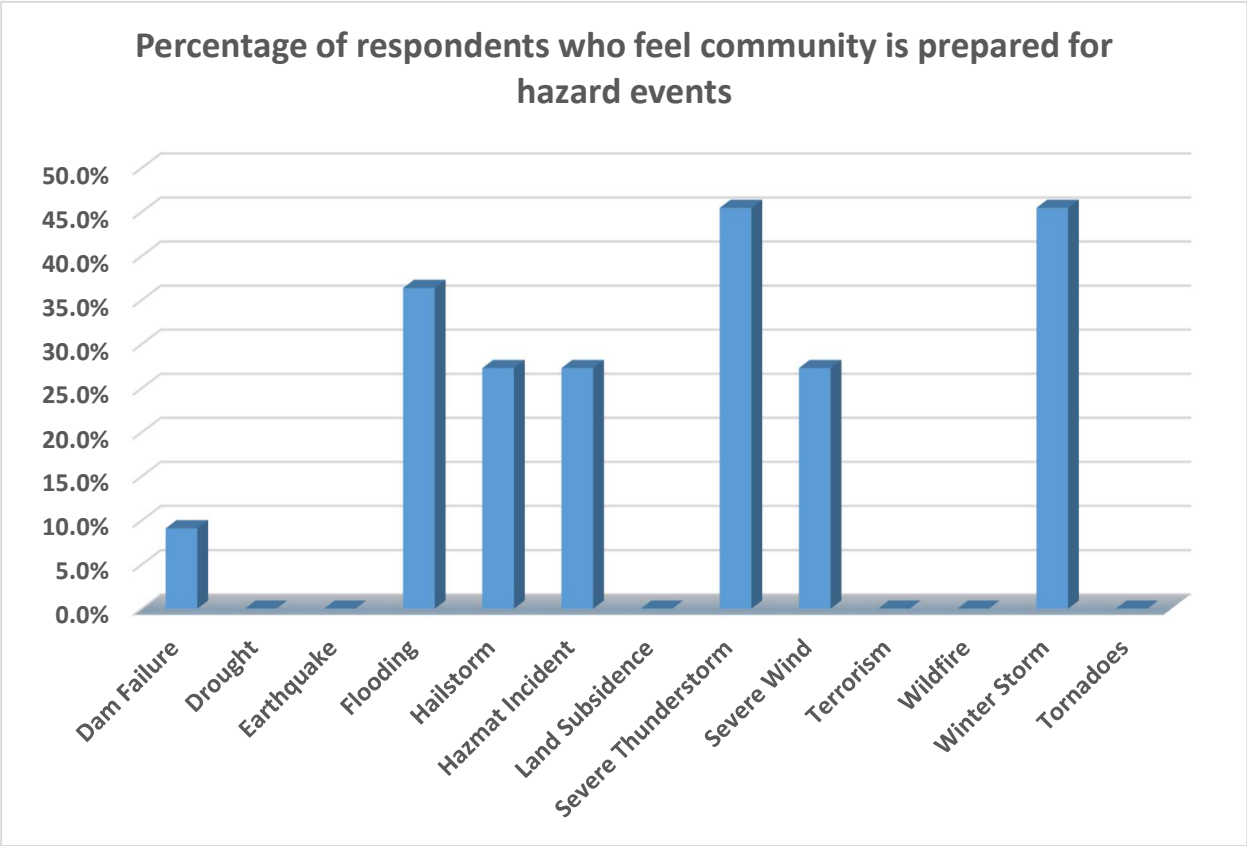
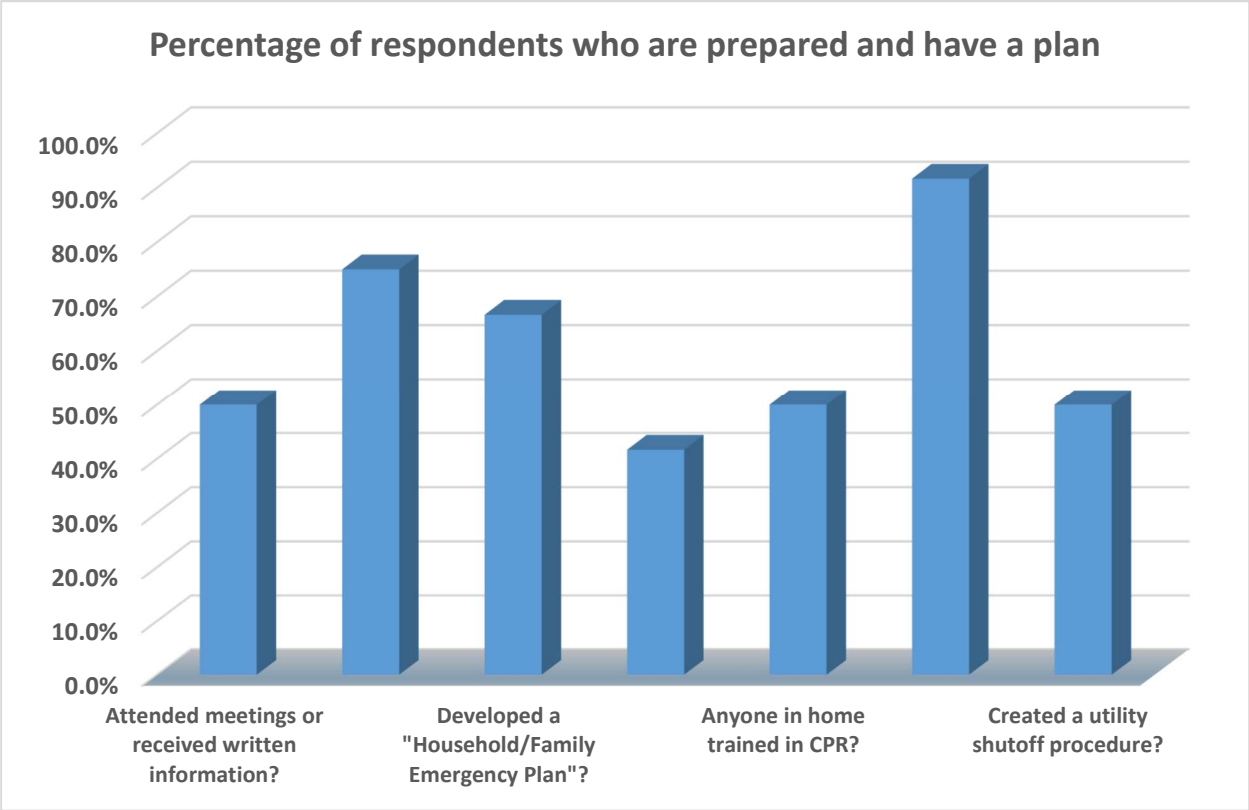


FIGURE 2.1.5



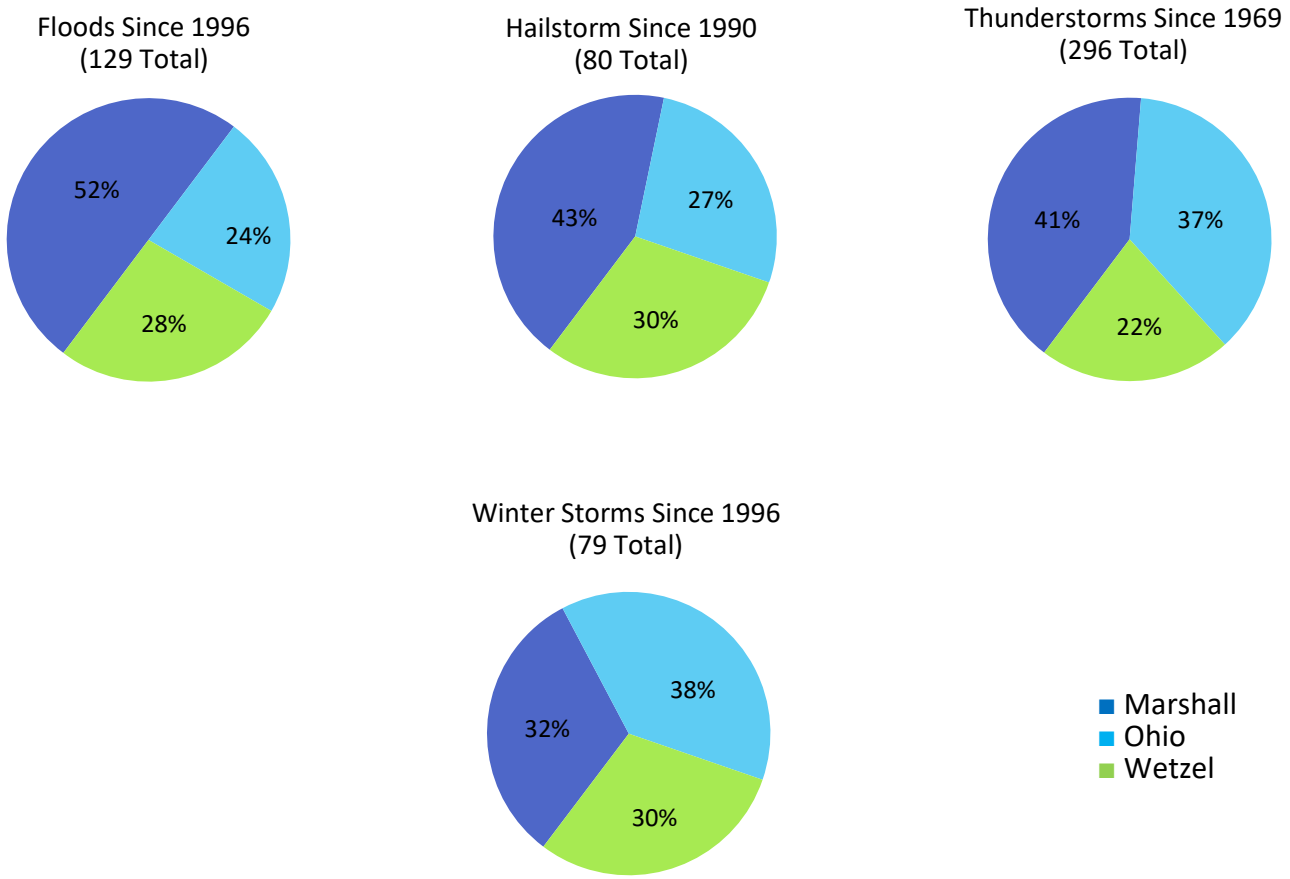
The relative risk of each county may also vary. The event records from the National Climate Data Center (NCDC) are used to gauge the relative risk of each county. If the number of events for a hazard in each county do not have a large variation, the risk is considered to be the same for each county. If the variation is significant, then the risk is higher or lower from the mean. The percentage of events in each county is used to develop a relative risk hazard table (Table 2.1.2). The percent of events for each county are shown in Figure 2.1.6. This graphic shows all hazards for which the NCDC event database was available. For Wetzel County, the wind events data was available from 2001 while for the other two counties, it dated back to 1996. Wetzel County data was adjusted to reflect the same period of 1996 to 2016.

It is significant to note that the intent of Table 2.1.1 is to list all occurrences of the hazards in consideration. Table 2.1.1 simply seeks to demonstrate that a particular hazard is indeed worthy of further risk analysis.

FIGURE 2.1.6

Natural Disaster Events

(*NCDC Event Records*)



Over an area as large as the lower Northern Panhandle, it seems intuitively obvious that the hazards listed in Table 2.1.1 would not affect the entire planning area in the same manner. For instance, the western portions of the county are much more populated, so hazards could be impactful in these areas. The response to hazards in the eastern portions of the planning area, though, could be difficult, adding to the magnitude of "cascading" hazard effects. Further, the western side of the planning area runs parallel to the Ohio River, increasing the likelihood for riverine flooding, while flash flooding or small-stream flooding is more likely in the east.

To further illustrate this concept, Table 2.1.2 depicts the participating county jurisdictions' relative hazard risk in relation to each other. The baseline hazard risk is a generalized average in each county. If a county appears to be more or less affected by a particular hazard, evidence was sought through research. The variances in risk are discussed in Section 2.2.

TABLE 2.1.2

HAZARD RISK												
JURISDICTION	Dam Failure	Drought	Earthquake	Flooding	Hailstorm	Hazmat Incident	Land Subsidence	Terrorism	Thunderstorm	Wildfire	Wind	Winter Storm
Marshall County	>	=	=	>	>	=	=	=	=	=	=	=
Ohio County	=	=	=	=	=	>	=	=	=	=	>	=
Wetzel County	=	=	=	=	=	=	<	=	<	=	=	=

Key: =: Equal Risk <: Lower Risk >: Higher Risk

PROBABILITY AND SEVERITY OF HAZARDS

Even though it is hard to foresee when and where the next disaster will hit, yet it is imperative to prepare for the most frequent and likely hazards. It is important to review the past event data to discern what events are more frequent and have caused the most damage. Based on archived event data, reasonable assumptions can be made regarding the vulnerability to hazards and the potential severity of each hazard. Based on probability and severity, hazards can be prioritized. Resources can be allocated to mitigate the effects of the most probable and severe events.

The first regional hazard mitigation plan for the three-county planning area was completed in the year 2011. The process used to develop the probability and severity matrix in the 2011 plan is also used in this update. The relative probability of each county in the region is computed from the historical event data. A regional average for each hazard was computed from the events for each county. The sum of regional averages was then divided by the number of events (as shown in Table 2.1.3) to determine the average of total hazards in the region. This average (18.1) was used as the median to determine probability.

TABLE 2.1.3

REGIONAL HAZARD AVERAGE AND MEDIAN											
Dam Failure	Drought	Earthquake	Flooding	Hailstorm	Hazmat Incident	Land Subsidence	Terrorism	Thunderstorm	Wildfire	Wind	Winter Storm
0	2	0	43	27	5	1	0	99	0	12	26
AVERAGE (Sum of Averages / 12):											18.1

Generally, the higher the frequency of an event, the higher the probability for future reoccurrence. The median and the distance from the median as a percentage was used for probability calculation. The following percentages were used for probability classification.

Percent	Classification
0 – 20%	Improbable
21 – 40%	Remote
41 – 60%	Occasional
61 – 80%	Probable
81 – 100%	Frequent

The probability classifications are generally stratified as shown below in Table 2.1.4.

After probability classifications were calculated, based on the input provided by the stakeholders, the Dam Failure was moved from "Improbable" to "Remote" classification. This was necessary as the earthen dams in the region are either past their design lifespan or are approaching the end of their lifespan. Unless these are restored or reinforced, they are more vulnerable to failure. The Ohio River Locks and Dams are also aging.

TABLE 2.1.4

Hazard Probability Classification		
Class	***Probability***	***Frequency***
Frequent	Likely to occur frequently	Continuously experienced
Probable	Will occur several times in the life of an item	Experienced several times
Occasional	Likely to occur sometime in the life of an item	Experienced
Remote	Unlikely but possible to occur in the life of an item	Unlikely that is has been experienced
Improbable	So unlikely that it can be assumed occurrence may not be experienced	Not experienced

In addition to probability, the severity of an event also affects the allocation of resources for mitigation actions. The severity depends upon 1) the extent or how widespread an event is 2) primary impact of the event and 3) the cascading or secondary impact of the event. The primary impact of a flood would be the loss of life and property damage due to rising water. One of the secondary impacts would be the restricted access due to submerged or washed out roads. Severity can also be determined from the damage caused by each event in the past. However, the damage data is not readily available for each event. Previous mitigation plans are used in determining the severity. Based on the review of available data, it is decided to use the severity classifications from the previous plan.

The following percentages are used for severity classifications:

Percent	Classification
0 – 20%	Negligible
26 – 50%	Marginal
51 – 75%	Critical
76 – 100%	Catastrophic

Local knowledge and input was also used in the severity classification process.

TABLE 2.1.5

Hazard Severity Classifications	
Description	***Mishap Definition***
Catastrophic	Death or major structural loss
Critical	Sever injury, severe illness or marginal structural damage
Marginal	Minor injury, minor illness or structural damage
Negligible	Less than minor injury, illness or structural damage

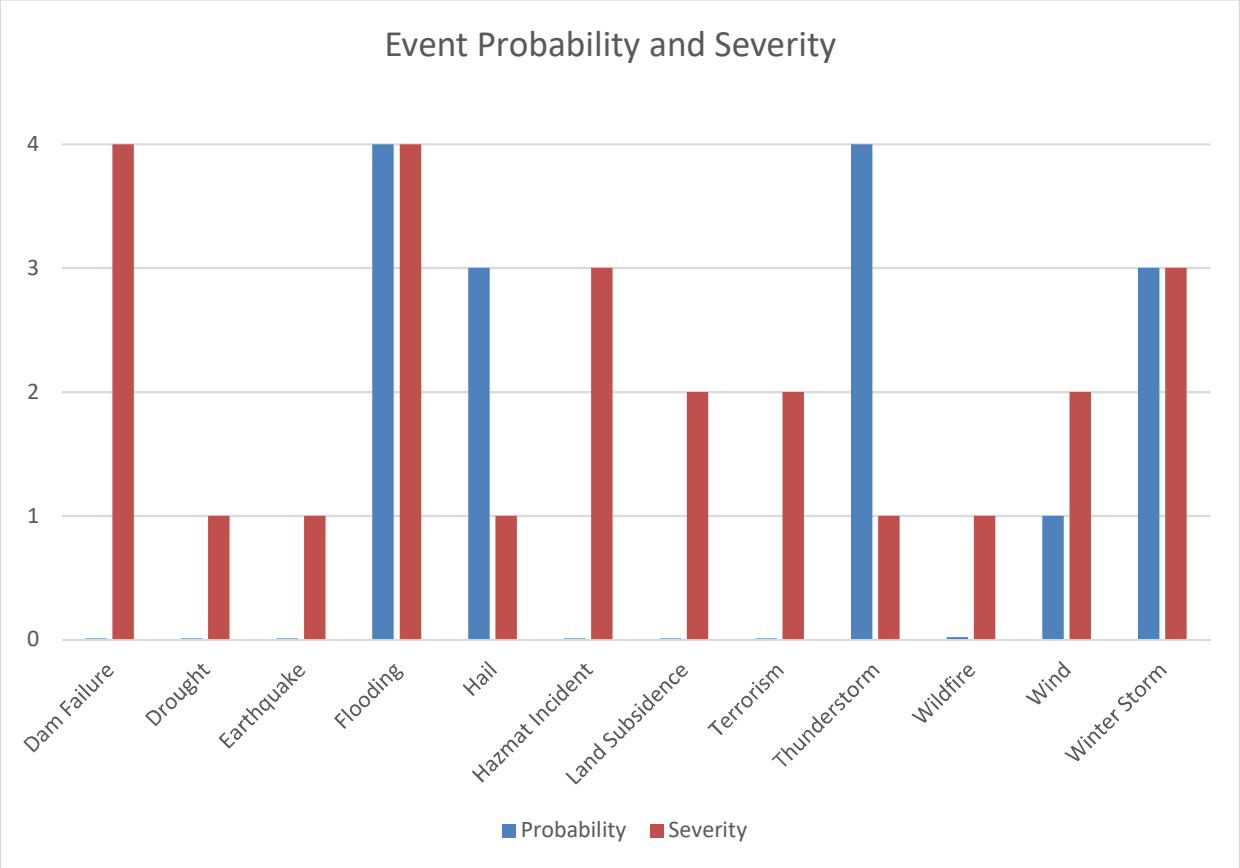
A risk assessment matrix of probability and severity is developed based on the classifications. The purpose of this matrix is to facilitate local decision making for resource allocation and mitigation actions. This matrix is presented in Figure 2.1.7.

FIGURE 2.1.7
Risk Assessment Matrix

Severity	***Hazard Probability***				
	Frequent	***Probable***	***Occasional***	***Remote***	***Improbable***
Catastrophic	Flood			Dam Failure	
Critical		Winter Storm		Hazmat Incidence Fracking	
Marginal			Wind		Land Subsidence Terrorism
Negligible	Thunderstorm	Hailstorm			Drought Earthquake Wildfire

A graphic presentation of this matrix is presented in Figure 2.1.8. This graphic is based on a probability scale of 0 to 4, where 0 is very unlikely (improbable) and 4 is highly probable (frequent). The severity scale of 1 to 4 is used where 1 is negligible severity and 4 is a catastrophic event.

FIGURE 2.1.8



Severe weather related events pose the greatest risk to the area. While man-made events like terror and hazardous material incidence cannot be ignored, the area is more prone to damage from natural hazards such as floods and winter storms.

CHAPTER 2.2 HAZARD PROFILES

Hazard profile and regional context of each hazard previously identified is presented in this section. References used in Section 2.2 and its subsection are included in Appendix D.

2.2.1 DAM FAILURE

A dam failure is when downstream flooding occurs as the result of complete or partial inundation of an impoundment. Dam failure results in rapid discharge of water with little or no notice. The region has many dams including high profile dams on the navigable Ohio River. While a dam failure in the region is improbable, its severity would be catastrophic.

REGIONAL CONTEXT

Period of Occurrence:	At any time
Number of Events to Date:	0
Probability of Event:	Remote-Dams that fail typically have some deficiency that causes the failure that should be detected by regular inspections and subsequently repaired. Heavy rains or moderate earthquakes may trigger a dam failure.
Warning Time:	Minimal – Depends on frequency of inspection
Potential Impacts:	Potential loss of human life, economic loss, environmental damage, disruption of lifeline facilities.
Causes Injury or Death:	Injury and risk of multiple deaths.
Potential Facility Shutdown:	30 days or more.

HAZARD EFFECTS

The primary effect of dam failure is the rapid and unpredictable flooding of downstream areas in the immediate vicinity of the dam. It used to be impossible to know exactly how and where the water will flow due to sudden failure of a dam. New technologies and datasets can now be used to identify at risk areas. Raster GIS applications along with Digital Elevation Models can now be used to identify inundation areas. FEMA has also developed guidance for such modeling and it is documented in the "Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failure". However, the time frame of this study, limited funding and a lack of other resources has precluded such

an analysis at this time. For major dams on the Ohio River, the US Army Corps of Engineers has the responsibility and expertise for maintenance and flood damage reduction.

A map showing vulnerability of the local areas to dam failure is included as Figure 2.2.1(a). This map was originally prepared by the JHC Consulting of Buckhannon, WV for the previous Hazard Mitigation Plan for the three-county planning area.

As per Federal Emergency Management Agency (FEMA), dam failure is often caused by the following reasons:

- Overtopping caused by floods that exceed the capacity of the dam.
- Deliberate acts of sabotage.
- Structural failure of materials used in dam construction.
- Movement and/or failure of the foundation supporting the dam.
- Settlement and cracking of concrete or embankment dams.
- Piping and internal erosion of soil in embankment dams.
- Inadequate maintenance and upkeep.

According to the WV State Hazard Mitigation Plan under the regulations dams are defined as: *An artificial barrier or obstruction, including any works appurtenant to it and any reservoir created by it, which is or will be placed, constructed, enlarged, altered or repaired so that it does or will impound or divert water*.

Due to the intense hydraulic fracturing activity in the region, the number of impoundment pools and pits is on the rise. These impoundments are used for the containment of fresh water, waste water or industrial wastes used in the process of hydraulic fracturing. As per the Chemicals in Natural Gas Operations website, “Many of the chemicals found in drilling and evaporation pits are considered hazardous wastes by the Superfund Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Upon closure, every pit has the potential to become a superfund site.” These impoundments are regulated by the West Virginia Department of Environmental Protection (WVDEP). Failure of these impoundments can cause significant damage in the vicinity of the impoundment.

Dam failures generally result from a complex interrelationship of several failure modes. Uncontrolled seepage may weaken the soils and lead to a piping failure. Surface erosion may lead to structural or piping failures.

The WV Dam Control & Safety Act classifies dams into four categories, as shown below:

- Class 1 (High Hazard): Dams located where failure may cause minor damage to dwellings, commercial or industrial buildings, main railroads, important public utilities, or where a high-risk highway may be affected or damaged.
- Class 2 (Significant Hazard): Dams located where failure may cause minor damage to dwellings, commercial or industrial buildings, main railroads, important public utilities, or where a high-risk highway may be affected or damaged. Loss of human life from a failure of a Class 2 dam is unlikely.
- Class 3 (Low Hazard): Dams located in rural or agricultural areas where failure may cause minor damage to non-residential and normally unoccupied buildings, or rural or agricultural land. Failure of a Class 3 dam would cause only a loss of dam itself and a loss of property use, such as use of related roads, with little additional damage to adjacent property.
- Class 4 (Negligible Hazard): Dams where failure is expected to have no potential for loss of human life, no potential for property damage, and no potential for significant harm to the environment.

HAZARD PROFILE

There are numerous dam facilities throughout the region, some of which are more high profile than others. With our location along the Ohio River, Ohio and Wetzel County contain US Army Corps of Engineers (USACE) lock and dam facilities. The Pike Island facility is located in Ohio County and the Hannibal facility is located in Wetzel County. Failures of these facilities would disrupt the region's economy as well as impact downstream communities via flooding.

Other dam facilities are not as high profile. The West Virginia Department of Environmental Protection (WVDEP) has four classes of dams. Class I dams post significant hazard and may result in major damage to structures and life. Class IV dams have negligible hazard and would have negligible damage to property, life and environment. Dams identified based on the WVDEP classification are shown in Table 2.2.1(a). In addition, there are privately owned impoundments/dams.

TABLE 2.2.1(a)
DAM STRUCTURES IN THE REGION

Dam Name	Hazard Class	ID Number
Class Two	4	05117
Conner Run Dam	1	05102
Upper Grave Creek #1	1	05104
Upper Grave #3	1	05105
Upper Grave #4	1	05106
Upper Grave #5	1	05107
Upper Grave #7	1	05109
Upper Grave #8	1	05110
Upper Grave #9	1	05111
Wheeling Creek Dam #3	1	05120
Wheeling Creek Dam #18	1	05112
Privately Owned	Unclassified	N/A

Dam facilities in the planning area also include flood control structures for the municipalities along the Ohio River. For instance, portions of the City of Benwood are located "below" the level of the Ohio River and are protected by a flood wall. In 2010, the City of Benwood completed various improvements to the floodwall levy and pump stations. Improvements consisted of the replacement of concrete top slabs with hatch and ventilation pipes, electrical improvements and replacements, VFD Pumps, level sensor and controller upgrades, installation of standby generator and site fencing at the existing Fifth Street Pump Station and the Sixth Street Pump Station. If the dam were to fail, these portions would be severely impacted. This structure could be at risk from the cascading effects of other dam incidents. For example, a failure of the Pike Island facility upriver could raise water levels enough to cause failure of the Benwood flood wall structure. Most of the dams listed in Table 2.2.1(a) are earthen dams nearing the end of their lifespan. These dams would be vulnerable to failure until such time they are restored or reinforced.

Impoundments from the coal and natural gas industries are also a concern for the three counties in the region. These facilities sometimes impound huge quantities of water and are not strictly regulated. Further, many of these facilities are earthen structures, subject to erosion and a number of other natural phenomena. Fortunately, all three (3) emergency management agencies in the participating counties

work diligently with mine and natural gas companies to strengthen preparedness. These efforts include the identification of large impoundments.

Additionally, the failure of dams outside of the region could impact participating counties. While there are USACE facilities in two (2) of the three (3) participating counties, it should be noted that the facilities are also located upstream from the planning area and these could cause impacts. These facilities include: New Cumberland Locks and Dam (New Cumberland, WV), Montgomery Locks and Dam (Monaca, PA), Dashields Locks and Dams (Coraopolis, PA) and Emsworth Locks and Dam (Pittsburgh, PA). While moderate dam failure hazards exist elsewhere in the planning area (as described above), the primary risk areas for dam failure are those along the Ohio Rivers, including the cities of Wheeling, McMechen, Benwood, Glen Dale, Moundsville, New Martinsville, and Paden City.

VULNERABLE STRUCTURES

The structures located within the primary risk area are shown in Table 2.2.1(b).

TABLE 2.2.1(b)
STRUCTURES VULNERABLE TO DAM FAILURE

County	Commercial/ Service/Utilities	Education	Industrial	Institution	Residential	Unspecified/ Unknown	TOTAL
Marshall	219	10	35	29	3,326	6,748	10,367
Ohio	709	20	12	50	6,035	5,854	12,680
Wetzel	281	5	0	21	2,627	914	3,848
Totals	1,209	35	47	100	11,988	13,516	26,895

LOSS ESTIMATES

In an effort to assist jurisdictional understanding of risks and implementation of strategies, loss estimates were prepared for each county (see Appendix E). By averaging these estimates, this plan assumes a total, regional loss estimate per dam failure incident to be as much as $1,155,979,200. If all counties in the region were affected to the “worst case scenario” level, as much as $2,526,775,280 could be lost.

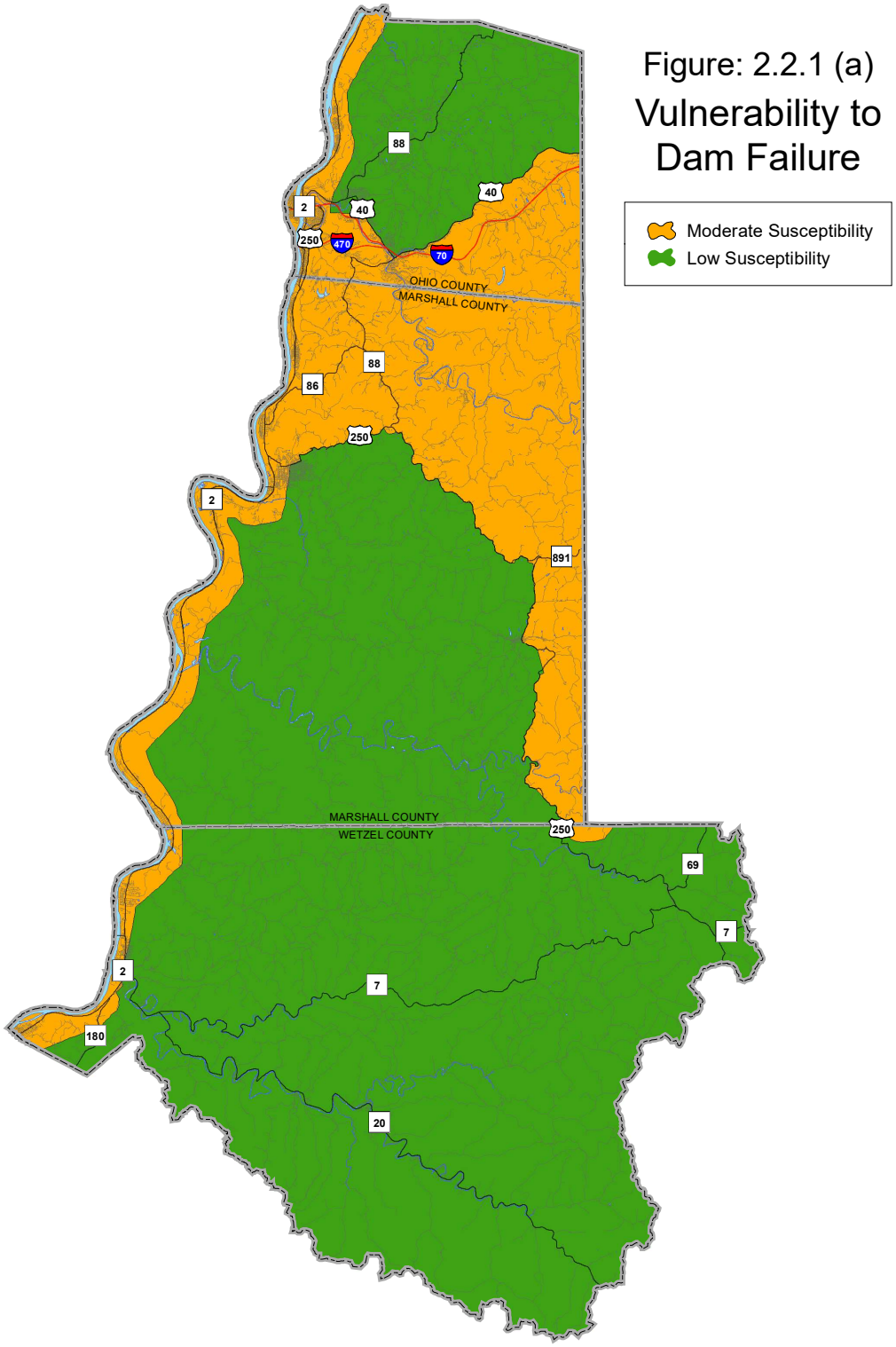


Figure: 2.2.1 (a)
Vulnerability to Dam Failure
Moderate Susceptibility
Low Susceptibility
88
40
2
40
250
470
70
OHIO COUNTY
MARSHALL COUNTY
88
86
250
2
891
MARSHALL COUNTY
WETZEL COUNTY
250
69
7
2
7
180
20

2.2.2 DROUGHT

A drought is a period of below-average precipitation in a given region, resulting in prolonged shortages in its water supply, whether atmospheric, surface water or ground water. A drought can last for months or years, or may be declared after as few as 15 days.

Droughts are infrequent events experienced only twice since the year 1999 in the planning area. The expanse of droughts generally can be the entire region. However, it is an improbably event with negligible severity.

REGIONAL CONTEXT

Period of Occurrence:	Summer months or extended periods with no precipitation
Number of Events to Date:	2
Probability of Event:	Improbable-Small scale droughts occur frequently, but events causing major disruption and economic loss are infrequent
Warning Time:	Weeks
Potential Impacts:	Activities that rely heavily on high water usage may be impacted significantly, including agriculture, tourism, wildlife protection, municipal water usage, commerce, recreation, electric power generation, and water quality deterioration. Droughts can lead to economic losses such as unemployment, decreased land values, and agribusiness losses. Minimal risk of damage or cracking to structural foundations, due to soils
Causes Injury or Death:	None
Potential Facility Shutdown:	None

HAZARD EFFECTS

A drought is a natural, yet unpredictable occurrence that can vary widely in progression, duration, severity, and local impact. A drought is a persistent and extended period of below normal precipitation causing abnormal moisture deficiency that results in adverse impacts on vegetation, animals and/or people. Drought has the following stages:

- Meteorological Drought: This drought stage is often defined by a period of substantially diminished precipitation for a duration and/or intensity that persists long enough to produce a significant hydrologic imbalance. The commonly-used definition of meteorological drought is an interval of time, generally on the order of months or years, during which the actual moisture supply at a given place consistently falls below the climatologically appropriate moisture supply.

- Agricultural Drought: This drought stage occurs when there is inadequate precipitation and/or soil moisture to sustain crop or forage production systems. The water deficit results in serious damage and economic loss to plant or animal agriculture. Agricultural drought usually begins after meteorological drought, but before hydrological drought, and can also affect livestock and other agricultural operations.

- Hydrological Drought: This drought stage is a result of deficiencies in surface and subsurface water supplies. It is measured as stream flow, and as lake, reservoir and ground water levels. There is usually a time lag between a lack of rain or snow and lower water levels in streams, lakes and reservoirs.

- Socio-economic Drought: This drought stage occurs when physical water shortages start to affect the health, well- being and quality of human life, or when the drought starts to affect the supply and demand of an economic product.

HAZARD PROFILE

A drought could have significant impact to the economy of the planning area, as all counties are home to agricultural activity. Marshall County sees the most farming, with 682 working farms. While Ohio and Wetzel Counties sees less agriculture, the numbers of farms (197 and 249 working farms respectively) show that drought could have an impact in those areas as well. Table 2.2.2(a) summarizes the number of farms in each county, as well as market value of crops sold. It also shows that agriculture's contribution to the local economy decreased in every county between the years of 2007 and 2012.

TABLE 2.2.2(a)

NUMBER OF FARMS AND CROP VALUE IN THE REGION

Agriculture in the Region			
County	***Number of Farms***	***Market Value of Crops***	***Percent Change in Value from 2012***
Marshall	648	$3,035,000	- 104
Ohio	147	$3,479,000	- 44
Wetzel	249	$1,177,000	- 104
TOTAL	1,044	$7,691,000	

Source: 2012 Census of Agriculture.

A prolonged drought could also have an effect on the local water supply. Many residents in Marshall, Ohio and Wetzel rely on private wells. Also, the PSD's that serve our region could be impacted if their water source is lessened. Those PSD's that purchase water from larger municipalities, such as Wheeling and Moundsville, could be impacted if those municipalities chose to keep their allotment of water for the use of their primary area.

LOSS ESTIMATES

The historical drought events are presented in Table 2.2.2(b). Due to a lack of available data, loss estimates for this hazard are not calculated. In a worst-case scenario, if all crops are lost, the total estimated loss would be $7,691,000.

TABLE 2.2.2(b)
DROUGHT EVENTS

Historical Drought Occurrences and Losses		
County	***Number of Droughts***	***Total Drought Losses***
Marshall	2	N/A
Ohio	2	N/A
Wetzel	2	N/A
TOTALS	**6**	**N/A**

Drought is a regional event that affects the three counties. Although the degree of impact may vary marginally from county to county, the entire region is vulnerable to this hazard. A regional vulnerability map is included as Figure 2.2.2(a).

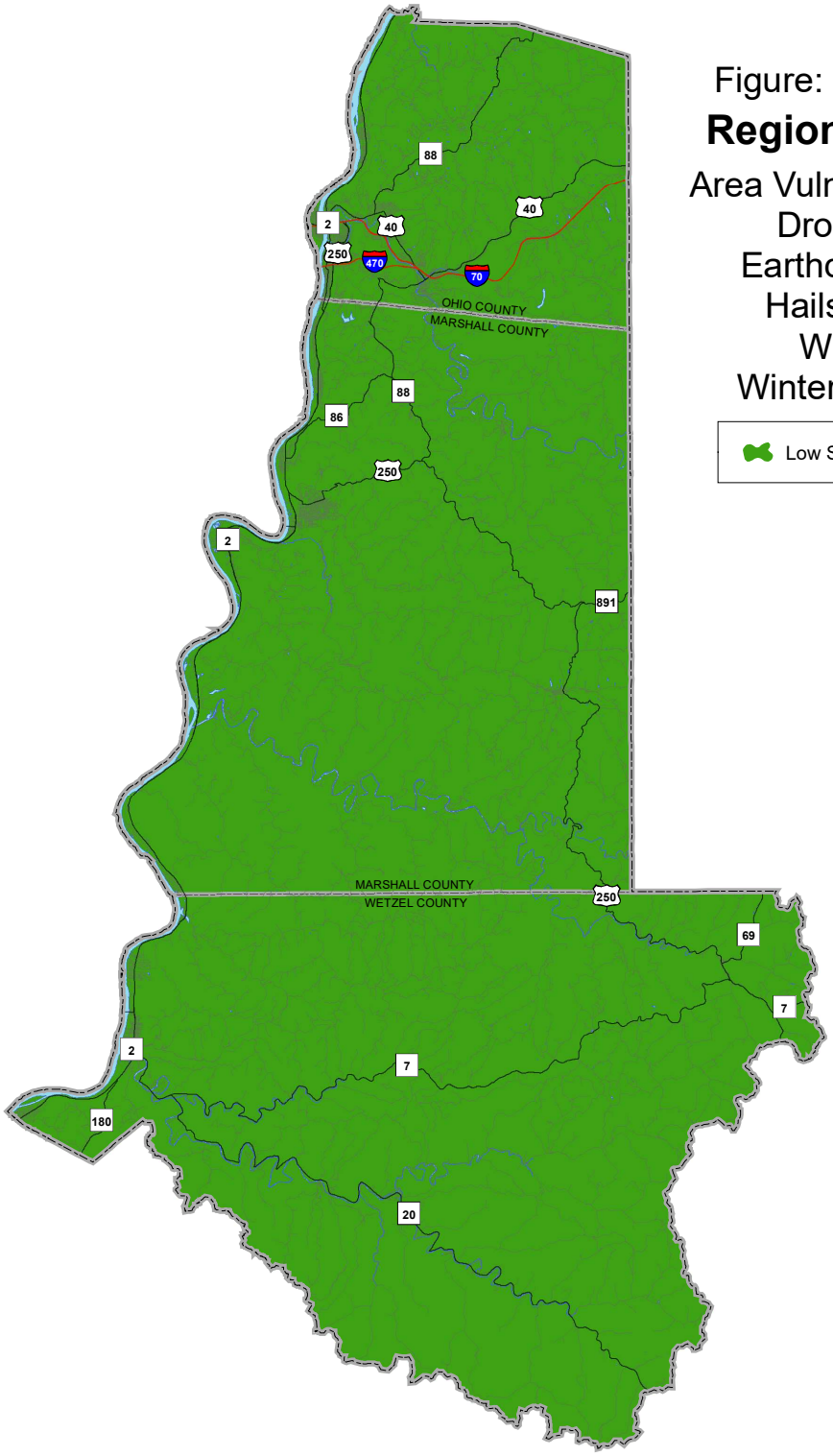


Figure: 2.2.2 (a)

Regional Map

Area Vulnerable to:
Drought
Earthquakes
Hailstorm
Wind
Winter Storm

Low Susceptibility

2.2.3 EARTHQUAKE

An earthquake (also known as a quake, tremor or temblor) is the perceptible shaking of the surface of the Earth, resulting from the sudden release of energy in the Earth's crust that creates seismic waves. Earthquakes can be violent enough to toss people around and destroy whole cities. The seismicity or seismic activity of an area refers to the frequency, type and size of earthquakes experienced over a period of time. Based on historical data, earthquake is an improbably event in the area.

Seismic waves as vibrations from earthquakes are recorded on seismographs. The magnitude of an earthquake measured from the wave of amplitude recorded by seismographs. The scale used to measure the earthquake magnitude is known as Richter scale. Earthquakes registering 2.0 or less are generally not felt by people, but recorded on instruments. A magnitude of 5.3 might be a moderate earthquake, while a 6.3 magnitude earthquake would be a strong earthquake. Richter scale is a logarithmic scale. Richter scale is now replaced by a scale called Moment Magnitude Scale which is considered to be a more accurate measure of earthquake size.

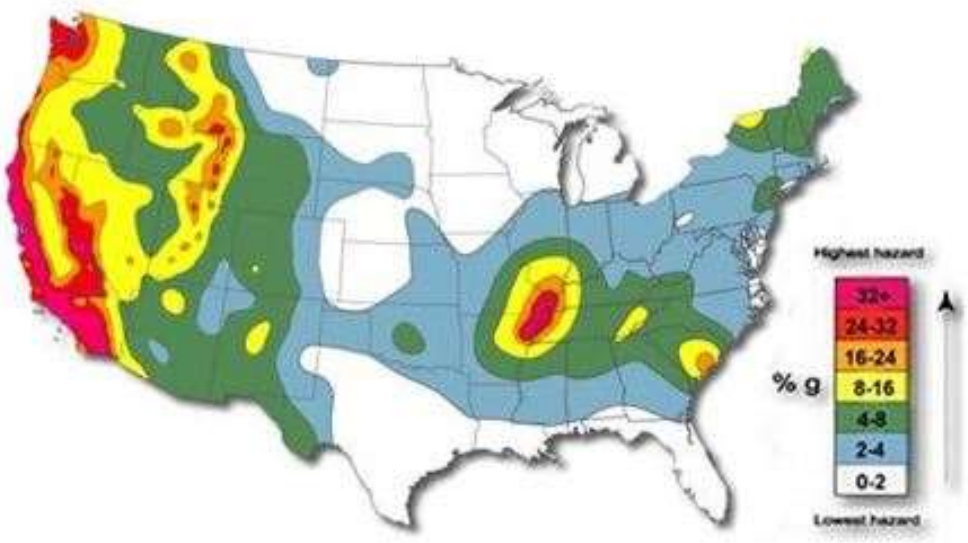
The severity of an earthquake depends upon its magnitude. While no one may notice a 2.0 earthquake, a 6.5 or larger scale will be severe with associated loss of property and life. A severe earthquake is improbable in the region. However, due to the intense hydraulic fracturing, the region has seen its share of injection wells. Injection wells are used to pump fracking by products back into the ground. The injection wells have been linked to localized earthquakes. These localized earthquakes can vary from negligible to critical in severity. Since the fracking process is new to the region, there is no historical data to determine probability and severity of fracking induced tremors. However, the region is vulnerable to this hazard. The probability of such an event will increase with the increase of fracking activity and the number of injection wells.

REGIONAL CONTEXT

Period of Occurrence:	At any time
Number of Events to Date:	0 Epicenters
Probability of Event:	Improbable
Warning Time:	None
Potential Impacts:	According to FEMA, area with a PGA of 3 to 5 (0.03 to 0.05) will incur little to no damage with no function loss.
Causes Injury or Death:	Minor risk of injury
Potential Facility Shutdown:	None

HAZARD EFFECTS

Earthquake hazards include any physical phenomenon associated with an earthquake that may produce adverse effects on human activities. While they are often used as synonyms, it is useful to distinguish between "hazards" and "risk". Hazards are the natural phenomena that might impact a region, regardless of whether there is anyone around to experience them or not. Risk refers to what we stand to lose when the hazard occurs; it is what we have built that's threatened. Risk can usually be measured in dollars or fatalities, Hazard is generally measured in more physical units: energy, shaking strength, depth of water inundation, etc. The map prepared by the USGS (shown below) shows earthquake ground acceleration having a 10% probability of being exceeded in the next 50 years for a firm rock site condition.



Primary earthquake hazards are:

- ground shaking
- landslides
- liquefaction
- surface rupture

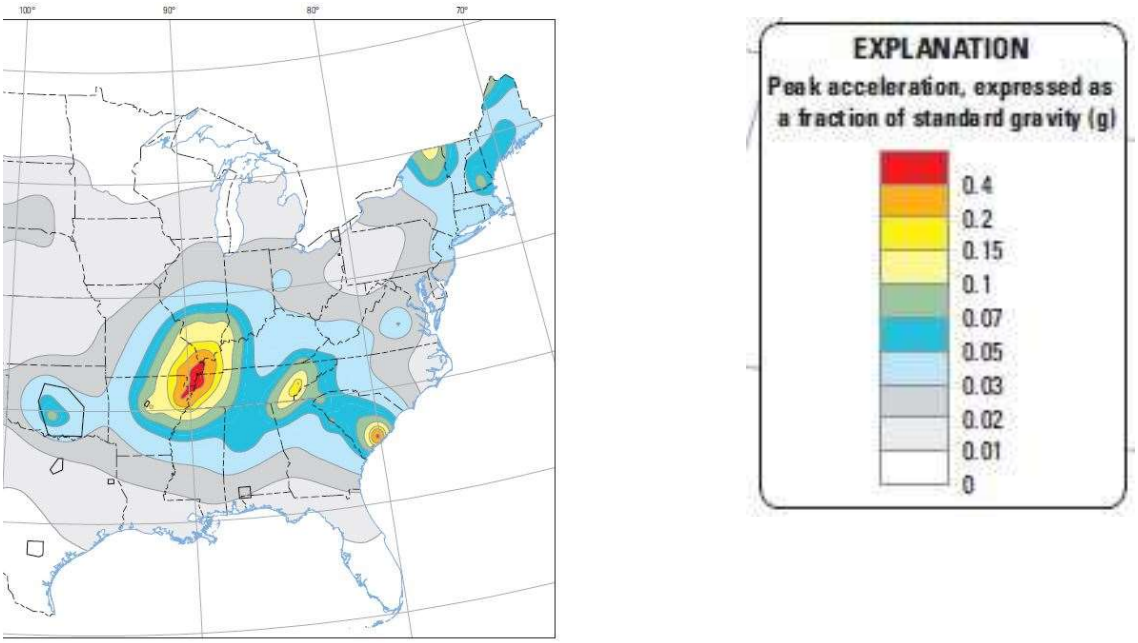
Secondary earthquake hazards are those that are caused by the primary hazards, and may often be more catastrophic:

- tsunami
- seiche
- flooding
- fire

HAZARD PROFILE

A map prepared by the USGS, shown as Figure 2.2.3(a), depicts the peak ground acceleration PGA values for the area with 10% chance of exceedance in 50 years. West Virginia does have an earthquake risk for it is located in the 2 and 3% area. All of our counties are located in the lower risk areas. A regional vulnerability map is included as Figure 2.2.2(a).

FIGURE 2.2.3(a)
PEAK AROUND ACCELERATION (PGA)



VULNERABLE STRUCTURES

Since the entire region has earthquake vulnerability, structures are considered to be vulnerable. The most populated city in the region follows 2000 international building codes (IBC 2000). These codes have minimum design requirements for earthquakes. However, a vast majority of structures predate these codes and the data regarding year of construction is not readily available. Locally in certain jurisdictions, no building permit is required for single family residential structures. Data is not readily available to discern what structures will withstand a moderate to severe earthquake. All structures are considered to be vulnerable for a severe earthquake and are shown in Table 2.2.3(a).

TABLE 2.2.3(a)

STRUCTURES VULNERABLE TO EARTHQUAKES

County	Commercial/ Service/Utilities	Education	Industrial	Institution	Residential	Unspecified/ Unknown	TOTAL
Marshall	291	15	49	61	5,513	10,600	16,529
Ohio	989	73	13	83	10,061	8,416	19,635
Wetzel	469	15	2	86	7,135	2,377	10,084
Totals	1,749	103	64	230	22,709	22,393	46,248

LOSS ESTIMATES

The random historical occurrence of earthquakes indicates that all structures in the planning area to be equally at risk from earthquakes. The severity of earthquakes in the local area is expected to be very low. All three counties estimate earthquake losses to be minimal.

2.2.4 FLOODING

A flood is an overflow of water that submerges land which is usually dry. Flooding may occur as an overflow of water from water bodies, such as a river, lake, or ocean, in which the water overtops or breaks levees, resulting in some of that water escaping its usual boundaries, or it may occur due to an accumulation of rainwater on saturated ground in an aerial flood. While the size of a lake or other body of water will vary with seasonal changes in precipitation and snow melt, these changes in size are unlikely to be considered significant unless they flood property or drown domestic animals.

Floods can also occur in rivers when the flow rate exceeds the capacity of the river channel, particularly at bends or meanders in the waterway. Floods often cause damage to homes and businesses if they are in the natural flood plains of rivers. While riverine flood damage can be eliminated by moving away from rivers and other bodies of water, people have traditionally lived and worked by rivers because the land is usually flat and fertile and because rivers provide easy travel and access to commerce and industry.

Some floods develop slowly, while others such as flash floods, can develop in just a few minutes and without visible signs of rain. Additionally, floods can be local, impacting a neighborhood or community, or very large, affecting entire river basins. For the three-county region, this is a frequent hazard often causing catastrophic damage.

REGIONAL CONTEXT

Period of Occurrence:	January through May Flash Flood-At any time depending on recent weather conditions. Result of Dam Failure-At any time
Number of Events to Date:	129
Probability of Event:	Frequent
Warning Time:	River Flood-3 to 5 days Flash Flood-Minutes to hours Dam Failure-None
Potential Impacts:	Impacts to human life, health, and public safety. Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, fire, damaged or destroyed critical facilities, and hazardous material releases. Can lead to economic losses such as unemployment, decreased land values, and agribusiness losses. Floodwaters are a public safety issue due to contaminants and pollutants.
Cause Injury or Death:	Injury and moderate risk of death
Potential Facility Shutdown:	Days to weeks

HAZARD EFFECTS

The three counties are susceptible to flooding largely due to physical geography, which includes the Ohio River and several creeks as well as varied topography. The worst floods usually occur when a river overflows its banks. Periodic floods occur naturally on most rivers, forming an area known as a "floodplain". With enough rainfall, the rivers and creeks will rise up to and over the floodplain, thus causing a flood. Flash flooding is also a common concern throughout the planning area. Historical occurrences can indicate where flash flooding will strike, but it is somewhat more unpredictable than riverine flooding. Flash flooding can be a result of an overloaded storm water management system, a washed out creek bed, water rushing off a hill or mountain, etc. In some cases, flash floods result in great damage because areas that are not in identified floodplains are generally less prepared than areas in known floodplains; and the flash flooding can occur without much notice.

HAZARD PROFILES

A software tool Total Exposure in Floodplain (TEIF) was utilized to profile type of impact a flooding event could have. TEIF 2.0 is developed for FEMA by the consulting firm of Drewberry, LLC. Consultants prepared the loss estimates from the available data for Ohio and Marshall Counties. In addition to building points and property values, 100 year floodplain identified by FEMA was used. TEIF could not be used for Wetzel County, as Wetzel County was not included in the FEMA contract with the consultants. The exclusion may have been due to a lack of needed detail, in the Wetzel County datasets for TEIF input.

TEIF uses building footprints to calculate at risk built area and applies replacement values for structures. In Wetzel County, building footprints within the 100 year FEMA floodplain were identified using ARCGIS. "The assessed values of these buildings were then adjusted by 40%, to reflect fair market value. This was done for consistency with TEIF output. Fair market value is the closest equivalent of replacement value. The table showing the dollar value of structures is included in the Appendix E.

VULNERABLE STRUCTURES

Structures that are susceptible to flooding are identified and shown in Table 2.2.4(a). A map showing flood prone areas is included as Figure 2.2.4(a).

TABLE 2.2.4(a)
STRUCTURES VULNERABLE TO FLOODING

County	Commercial/ Service/Utilities	Education	Industrial	Institution	Residential	Unspecified/ Unknown	TOTAL
Marshall	79	1	8	5	490	832	1,412
Ohio	203	4	5	12	1,039	2,038	3,301
Wetzel	187	6	2	32	1,442	300	1,969
Totals	466	11	15	49	2,971	3,170	6,682

LOSS ESTIMATES

Losses from floods are unpredictable. They are a function of hazard severity and cascading effects. Damages will also vary from event to event. The replacement values of susceptible structures are included in the Appendix F. The values for Ohio and Marshall County are based on the building area and cost of construction per unit. The values for Wetzel County are fair market values estimated from the assessed value.

Reported flood events and associated losses are shown in Table 2.2.4(b).

TABLE 2.2.4(b)
PROPERTY DAMAGE FLOOD EVENTS 1996 - 2016

County	Number of Events	Amount of Property Damage
Marshall	18	$7,385,000
Ohio	10	$47,830,000
Wetzel	10	$10,222,000
Regional	38	$65,437,000

Source: National Centers for Environmental Information

REPETITIVE FLOOD DAMAGE

The State Hazard Mitigation Plan has used the repetitive loss (RL) and severe repetitive loss (SRL) properties data from the BureauNet (Rep Loss List.xls and SRL List.xls) and other relevant datasets to identify RL, SRL and mitigated properties in the state. Several databases were merged for this analysis. West Virginia DHSEM staff continues to maintain, clean and update these datasets using tools at their disposal. They also continue to align West Virginia RL property data and SRL property data with validated FEMA NFIP RL and SRL property data, annually. Statewide dataset contains local inventory for RL, SRL and mitigated properties. This plan includes, by reference, the RL, SRL, and mitigated local properties on the State Hazard Mitigation Plan.

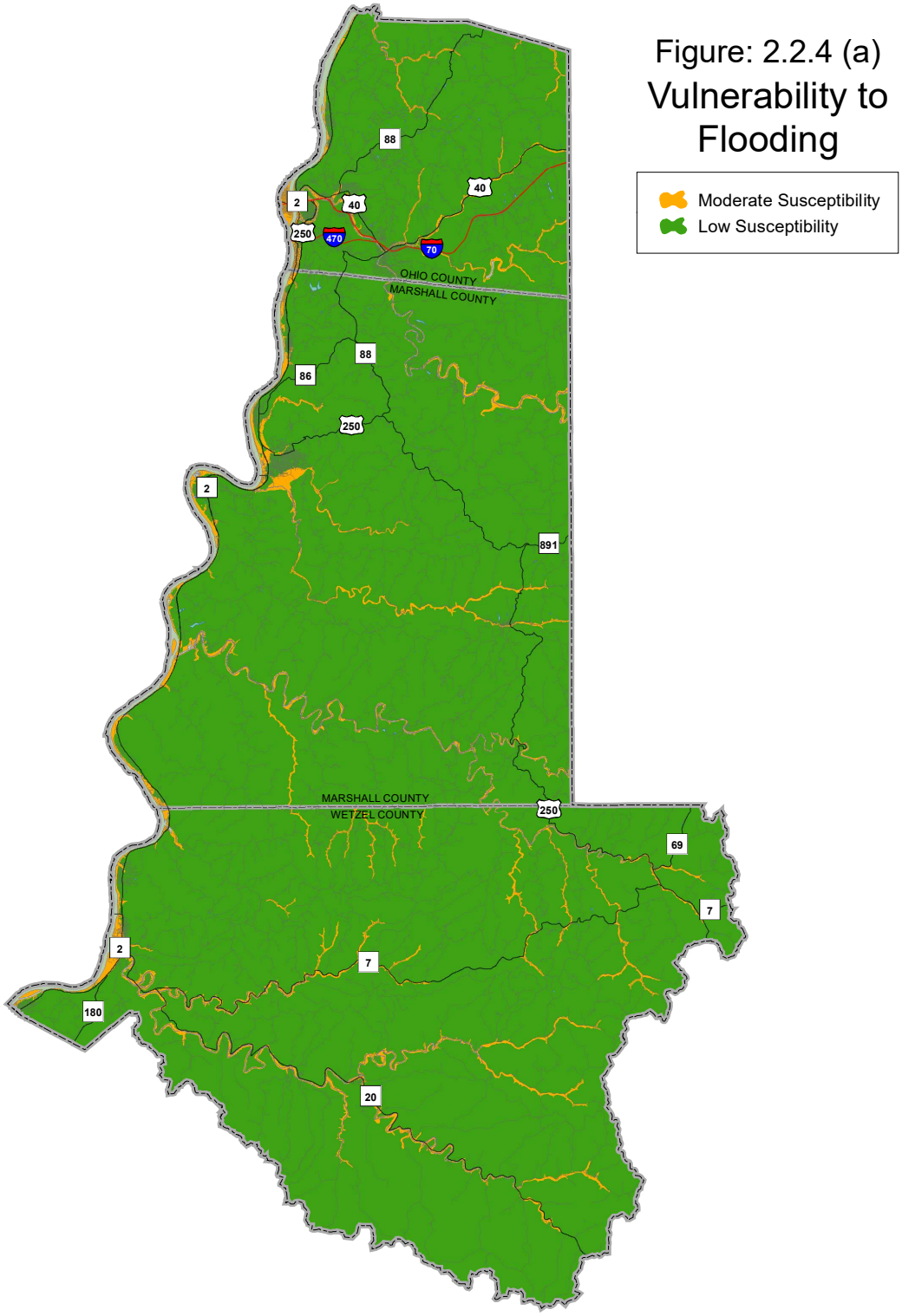


Figure: 2.2.4 (a)
Vulnerability to Flooding
Moderate Susceptibility
Low Susceptibility
88
40
40
2
250
470
70
OHIO COUNTY
MARSHALL COUNTY
88
86
250
2
891
MARSHALL COUNTY
WETZEL COUNTY
250
69
7
2
7
180
20

2.2.5 HAILSTORM

Hail is a form of solid precipitation. It consists of balls or irregular lumps of ice, each of which is called a hailstone. Unlike graupel, which is made of rime, and ice pellets, which are smaller and translucent, hailstones consist mostly of water ice and measure between 5 millimeters (0.2 in) and 15 centimeters (6 in) in diameter.

The entire region is vulnerable to hailstorms. Rarely the hailstorms have been larger than a marble. It is a minor hazard and is not associated with catastrophic damage.

REGIONAL CONTEXT

Period of Occurrence:	At any time
Number of Events to Date:	80
Probability of Event:	Probable
Warning Time:	Minutes to hours
Potential Impacts:	Large hail can minimally damage property (facilities) as well as crops
Causes Injury or Death:	Injury
Potential Facility Shutdown:	Minimal

HAZARD EFFECTS

The severity of hail events range based on size of hail, winds, and structures in the path of a hail storm. Storms that produce high winds in addition to hail are most damaging and can result in numerous broken windows and damaged siding. Hailstorms can cause extensive property damage affecting both urban and rural landscapes. Fortunately, most hailstorms produce marble-size or smaller hailstones. These can cause damage to crops, but they normally do not damage buildings or automobiles. Larger hailstones can destroy crops, livestock and wildlife and can cause extensive damage to buildings, including roofs, windows and outside walls. Vehicles can be total losses. When hail breaks windows, water damage from accompanying rains can also be significant.

VULNERABLE STRUCTURE

Since the entire region is vulnerable to hailstorm damage, all structures in the three-county area are included in Table 2.2.5(a). A regional map showing hailstorm vulnerability is included as Figure 2.2.2(a).

TABLE 2.2.5(a)

STRUCTURES VULNERABLE TO HAILSTORM

County	Commercial/ Service/Utilities	Education	Industrial	Institution	Residential	Unspecified/ Unknown	TOTAL
Marshall	291	15	49	61	5,513	10,600	16,529
Ohio	989	73	13	83	10,061	8,416	19,635
Wetzel	469	15	2	86	7,135	2,377	10,084
Totals	1,749	103	64	230	22,709	21,393	46,248

LOSS ESTIMATES

As a result of this minor hazard, potential losses are small, even though all structures in the region can be at risk for hail damage. The average losses per worst-case scenario hail event could total $1,263,095,843. If all counties were damaged to the "worst-case scenario" level, losses could be as much as $3,789,287,530. However, hailstorms are infrequent and rarely affect all three counties at once.

2.2.6 HAZARDOUS MATERIAL INCIDENT

Hazardous materials are the chemicals/substances that have the potential to harm a person or the environment upon contact. Areas most prone to this hazard are in the vicinity of industries associated with production and processing of hazardous chemicals and the transportation networks used for distribution and delivery.

REGIONAL CONTEXT

Period of Occurrence:	At any time
Number of Events to Date:	24
Probability of Event:	Remote
Warning Time:	None
Potential Impacts:	Potential loss of human life, economic loss, environmental damage.
Causes Injury or Death:	Injury and risk of multiple deaths
Potential Facility Shutdown:	Days to weeks

HAZARD EFFECTS

Chemicals are found everywhere. They purify drinking water, increase crop production and simplify household chores. But chemicals also can be hazardous to humans or the environment if used or released improperly. Hazards can occur during production, storage, transportation, use or disposal. People and communities are at risk if a chemical is used unsafely or released in harmful amounts into the environment. Hazardous materials in various forms can cause death, serious injury, long-lasting health effects and damage to buildings, homes and other property. Many products containing hazardous chemicals are used and stored in homes routinely. These products are also shipped daily on the nation's highways, railroads, waterways and pipelines. Chemical manufacturers are one source of hazardous materials, but there are many others, including service stations, hospitals and hazardous materials waste sites.

Transportation networks are also at risk for hazardous material incidence. These include roadways, river and pipeline.

HAZARD PROFILE

The chemical production, processing and storage facilities can have events where chemicals escape in the environment and affect surrounding developments. An incidence on a roadway or river can also affect surrounding populations. The location of fixed assets and knowledge of associated chemicals can be used in determining the potential at risk population and assets. Multiple scenarios can be developed based on plume disbursement models. Based on the buffering concept in GIS, effects of spills can also be discerned. Plume dispersion and buffering can also be developed to identify at risk areas.

The three-county region has over 40 fixed facilities and several miles of roadway and pipeline. A hazardous material incidence can happen at any point location. The map of fixed facilities is not included in this plan due to security concerns. A map showing one mile buffer around major highways in the region is included as Figure 2.2.6(a). The freight flow studies done within the region indicate that the flammable liquids are the most frequently transported material followed closely by flammable/non-flammable gases and corrosive materials.

Due to the nature of fracking and constant drilling at multiple sites and movement of rigs within the region, it is hard to predict the back roads that will be in use for movement of chemicals and waste to and from the well sites. Extensive efforts and resources will be needed to capture at risk populations due to this activity. In addition, a HAZMAT event can occur at any one of the natural gas collection, separation or fractionation facilities in the region.

Ohio River railroad and pipeline is also a source of potential incidence. Almost 11% of all freight on the Ohio River traversing through the region is hazardous. Pipeline transport of shale product is rapidly increasing. Extensive network of pipelines is being developed to move product from the well site to processing locations throughout the region and locations elsewhere in the country. The pipeline growth also increases the vulnerability to hazardous material incidence. Chemicals are also transported on the railroad.

VULNERABLE STRUCTURES

The number of structures that can potentially be affected by hazardous material (HAZMAT) incidence are shown in Table 2.2.6(a). These are structures within a one mile buffer of selected roadways. The roadways and buffer are shown in Figure 2.2.6(a).

TABLE 2.2.6(a)
VULNERABLE STRUCTURES FOR HAZMAT INCIDENCES ON SELECTED ROADWAYS

County	Commercial/ Service/Utilities	Education	Industrial	Institution	Residential	Unspecified/ Unknown	TOTAL
Marshall	261	13	25	42	3,384	8,794	12,519
Ohio	936	71	12	77	8,266	8,324	17,686
Wetzel	458	13	2	67	5,721	1,946	8,207
Totals	1,655	97	39	186	17,371	19,064	38,412

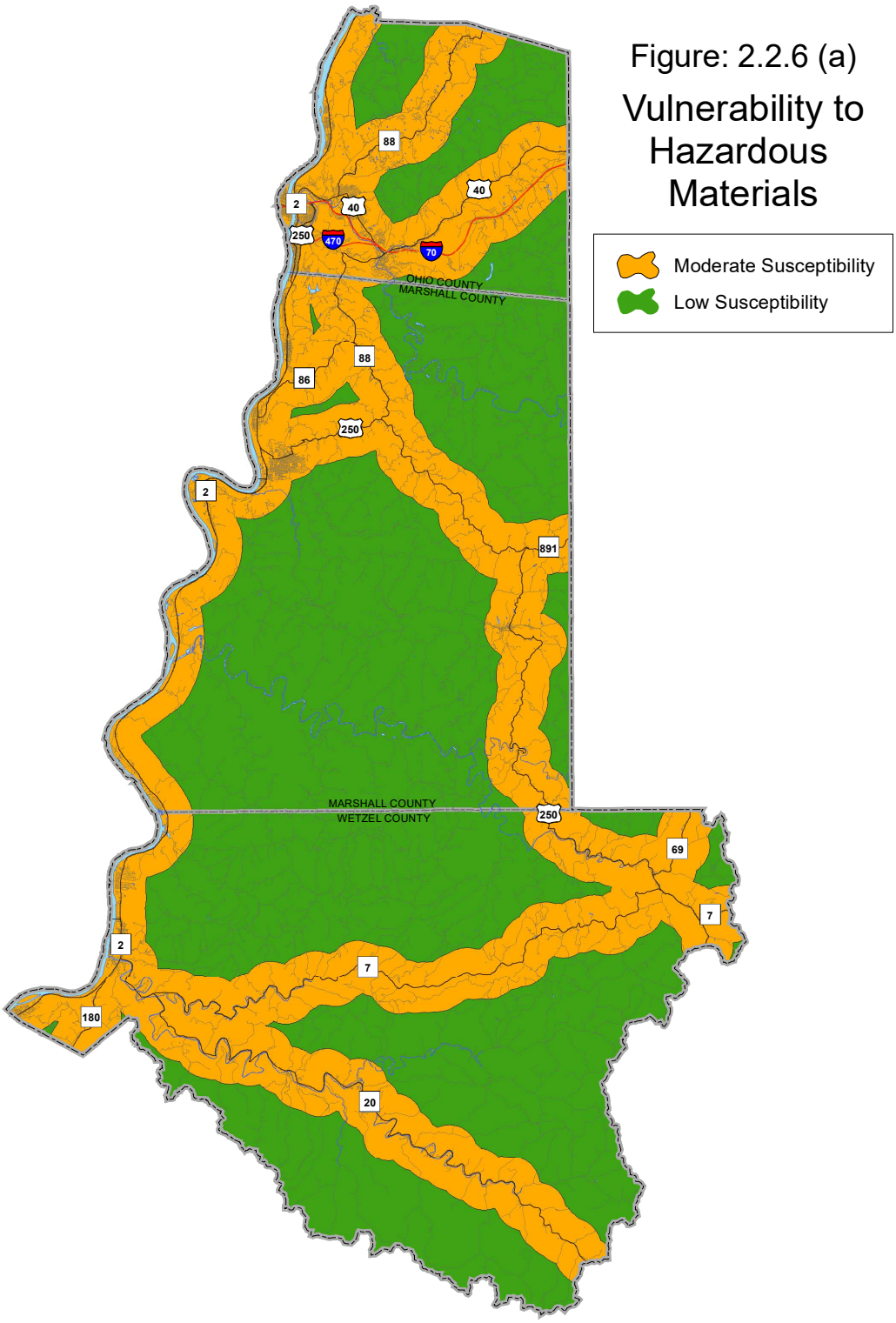


Figure: 2.2.6 (a)
Vulnerability to Hazardous Materials
Moderate Susceptibility
Low Susceptibility
88
40
40
2
250
470
70
OHIO COUNTY
MARSHALL COUNTY
88
86
250
2
891
MARSHALL COUNTY
WETZEL COUNTY
250
69
7
2
7
180
20

LOSS ESTIMATES

In general, due to the higher number of covered facilities, large network of pipelines, and the presence of major thoroughfares, each county can be said to have a high risk. In an effort to assist jurisdictional understanding of risks and implementation of strategies, estimates were prepared for each county using structures in the roadway buffer area and are shown in Table 2.2.6(b).

TABLE 2.2.6(b)
LOSS ESTIMATES

Estimated Hazardous Material Losses	
County	***Loss Estimate***
Marshall	$1,001,939,290
Ohio	$1,825,282,400
Wetzel	$ 578,137,540
TOTALS	**$3,405,359,230***

*Estimates based on rent assessed values.

Number of reported HAZMAT events and losses are shown in Table 2.2.6(c).

TABLE 2.2.6(c)
HAZMAT INCIDENCE EVENTS AND LOSSES

County	Number * of Events	Reported Losses
Marshall	13 **	$ 692,520
Ohio	8	$ 11,520
Wetzel	3	$ 57,757
Totals	24	$ 761,797

* Events since 2005.
** Losses for event in August, 2016 are not known and not included.

2.2.7 LAND SUBSIDENCE

Land subsidence is a gradual settling or sudden sinking of the Earth's surface owing to subsurface movement of earth materials. The region is rich in coal and natural gas deposits. Ohio and Marshall Counties have several active or abandoned coal mines. The region is prone to land subsidence. A sinkhole just west of the region near Cambridge, Ohio, shut down I-70 for several days. A subsurface void under I-470 was filled with concrete to alleviate a possible sinkhole. Although this happened several years ago, slips happen in the region and the presence of underground mines contributes to the area's vulnerability to land subsidence.

In addition, extensive fracking activity and the presence of injection wells increases the vulnerability to this hazard.

REGIONAL CONTEXT

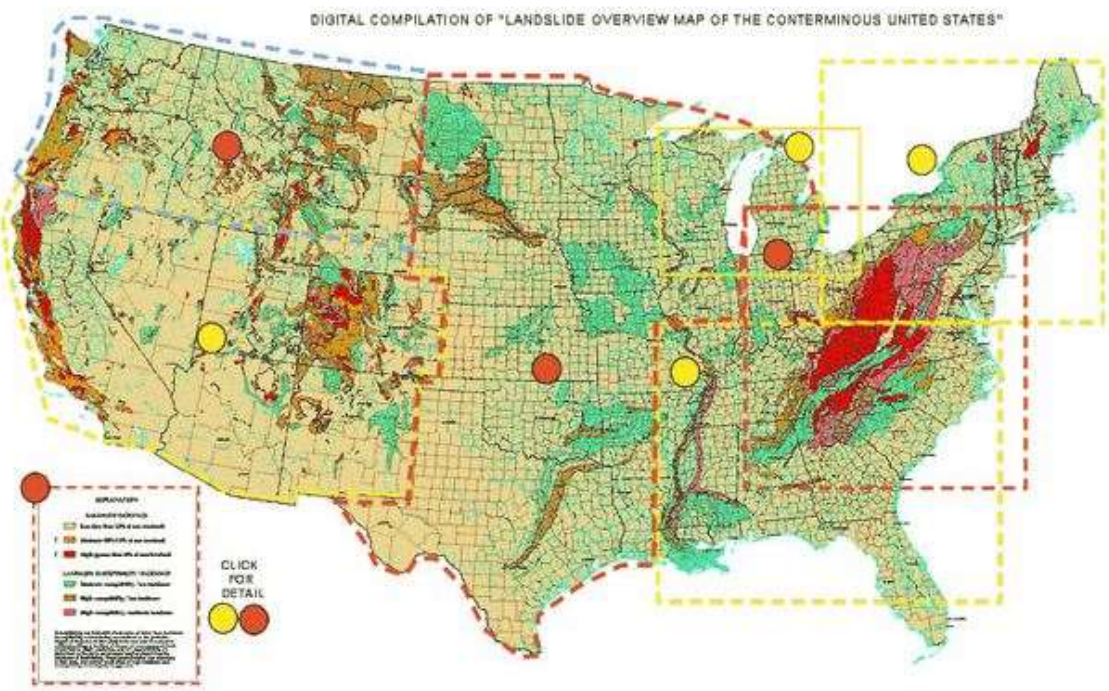
Period of Occurrence:	At any time-Chance of occurrence increases following longs periods of heavy rain, snowmelt, or near construction activity.
Number of Events to Date:	0
Probability of Event:	Improbable
Warning Time:	Weeks to months-Some instances of land subsidence can occur quickly without warning, but often in the context of other storm events.
Potential Impacts:	Economic losses such as decreased land values, agribusiness losses, disruption of utility and transportation systems, and costs of any litigation. May cause geological movement, causing infrastructure damages ranging from minimal to severe.
Causes Injury or Death:	Injury
Potential Facility Shutdown:	Days to weeks

HAZARD EFFECTS

Land subsidence occurs when large amounts of groundwater have been withdrawn from certain types of rocks, such as fine-grained sediments. The rock compacts because the water is partly responsible for holding the ground up. When the water is withdrawn, the rock falls in on itself. You may not notice land subsidence too much because it can occur over large areas rather than in a small spot. The principal causes are aquifer-system compaction, drainage of organic soils, underground mining, hydro compaction, natural compaction, sinkholes, and thawing permafrost.

HAZARD PROFILES

All three counties lie on the geological formation containing evaporated rock such as salt and gypsum; however much of our area in Ohio and Marshall Counties has been mined, which can lead to additional subsidence. As a result, the two counties appear susceptible to subsidence, but it should be noted that the type of subsidence can vary. Our participating counties have not reported significant numbers of historical land subsidence events. Most slips occur from other hazards, such as heavy rains. Others may result from construction or fracking activities. In Marshall County officials reported a land subsidence problem along State Route 2 in the area known as the "Narrows". The map provided by the USGS shows the Landslide Susceptibility/Incidence.



VULNERABLE STRUCTURES

The structure located on active or abandoned mines are considered to be vulnerable and shown in Table 2.2.7(a). A map showing mines in the region is included as Figure 2.2.7(a).

TABLE 2.2.7(a)
STRUCTURES VULNERABLE TO LAND SUBSIDENCE

County	Commercial/ Service/Utilities	Education	Industrial	Institution	Residential	Unspecified/ Unknown	TOTAL
Marshall	53	8	20	15	2,240	4,463	6,799
Ohio	358	18	3	30	4,854	1,883	7,146
Wetzel	0	0	0	0	7	5	12
Totals	411	26	23	45	7,101	6,351	13,957

LOSS ESTIMATES

Land subsidence can be a gradually occurring hazard or it can occur rapidly. Either case, repairing damages as a result of subsidence can be costly. Structural foundations, roadways and utilities can be severely damaged.

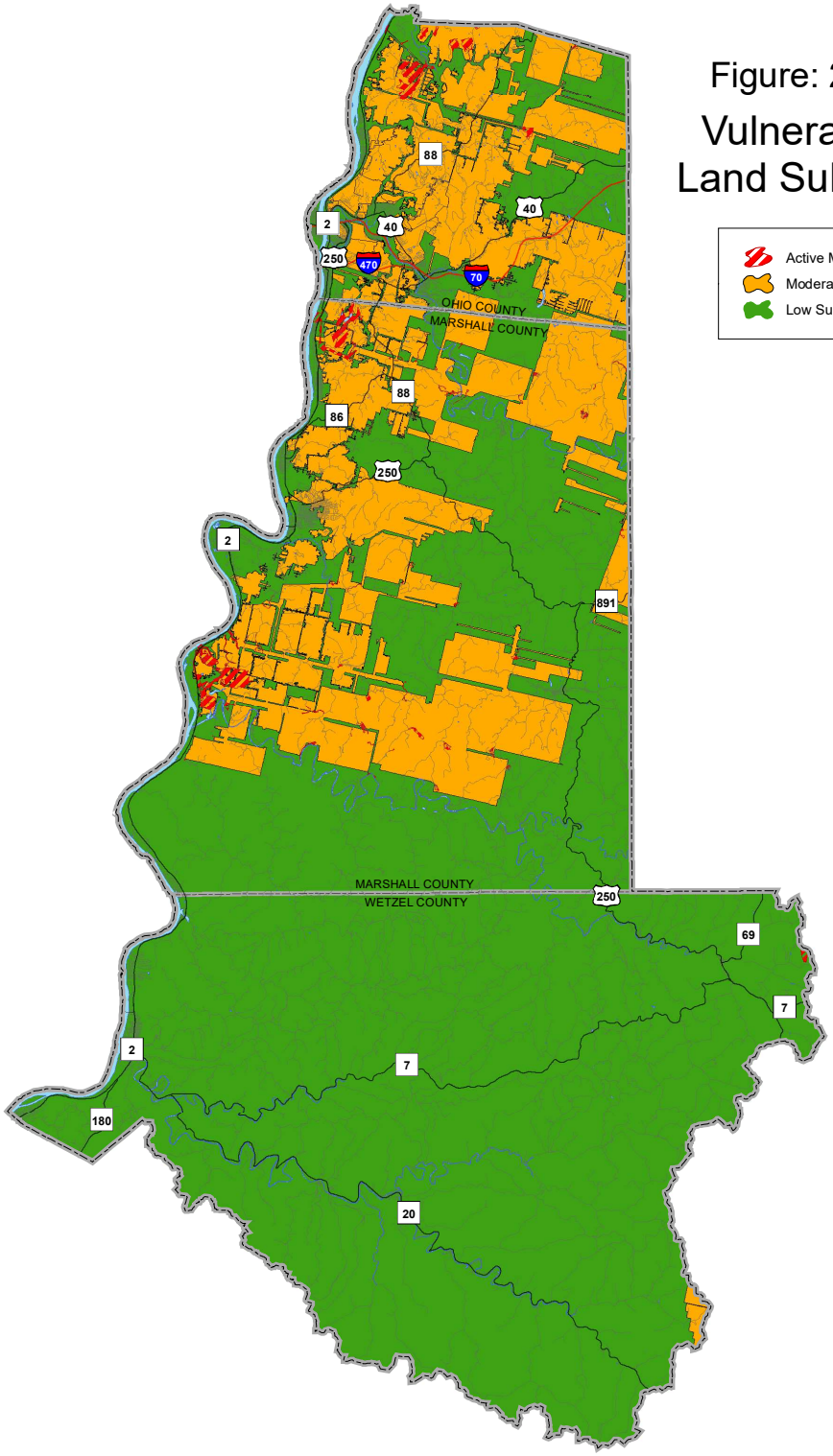


Figure: 2.2.7 (a)

Vulnerability to Land Subsidence

Active Mining Permits
Moderate Susceptibility
Low Susceptibility

Source: http://tagis.dep.wv.gov/home/MiningData and WV Geological & Economic Survey.

2.2.8 TERRORISM

Terrorism can be generally defined for the purpose of this plan as acts of violence or use of force against people and property for intimidation and achieving political gains. Following is the description of terrorism in the U.S. Code:

> *18 U.S.C. § 2331 defines "international terrorism" and "domestic terrorism" for purposes of Chapter 113B of the U.S. Code, entitled "Terrorism." International terrorism occurs primarily outside the territorial jurisdiction of the U.S., or transcend national boundaries in terms of the means by which they are accomplished. International terrorism is beyond the scope to this plan and is not addressed here.*

"Domestic terrorism" means activities with the following three characteristics:

- Involve acts dangerous to human life that violate federal or state law;
- Appear intended (i) to intimidate or coerce a civilian population; (ii) to influence the policy of a government by intimidation or coercion; or (iii) to affect the conduct of a government by mass destruction, assassination or kidnapping; and
- Occur primarily within the territorial jurisdiction of the U.S.

Acts of terrorism include public mass shooting, hijacking, kidnapping, bombings, use of chemical, biological or radioactive weapons and cyberattacks. Previously only governmental assets, high profile facilities and events were considered to be potential terrorist targets. However, recent incidents have shown kindergartens, shopping center, cinemas, religious buildings, bars, cafes all have been the targets. In light of these incidents it is almost impossible to isolate potential areas or structures that may be vulnerable to terrorism.

REGIONAL CONTEXT

Period of Occurrence:	At any time.
Number of Events to Date:	0
Probability of Event:	Infrequent
Warning Time:	Minimal-depends on the presence of a threat
Potential Impacts:	Potential loss of human life, economic loss, environmental damage, disruption of lifeline facilities
Causes Injury or Death:	Injury and risk of multiple deaths
Potential Facility Shutdown:	Days to weeks or more

HAZARD EFFECTS

Terrorism is a random act of violence that can happen at any place at any time. It causes loss of life and property and has a long, lasting impact on people and communities. Its purpose is to intimidate to achieve political gains or advance a cause. The impact of a terrorist act is felt far beyond the location. It draws national and international sympathy and attention. Invariably these acts bring people and communities together and strengthen resolve to expunge terrorism.

HAZARD PROFILE

All three counties are vulnerable to this hazard. Even though it is hard to predict where a terrorism act may occur, it may be reasonable to assume areas where people congregate and densely developed areas may be more vulnerable. Also, all high-profile structures and infrastructure such as transportation and utilities may also be more vulnerable. A terrorist act affects community's sense of security and erodes confidence in the ability of government to protect its citizens. Urbanized areas due to the density of development and existence of several areas (e.g. parks, stadiums, CBD, government buildings, religious buildings etc.) where people congregate are more prone to terrorist acts. Urban areas in the three-county region are shown in the map included as Figure 2.2.8(a). These areas are considered to be more vulnerable.

VUNERABLE STRUCTURES

All commercial and Educational structures and, government buildings are considered to be potential targets. In addition, local events can be at risk. Generally, urban areas due to the density of development are more vulnerable and shown in Table 2.2.8(a).

TABLE 2.2.8(a)
Vulnerable Structures for Terrorism

County	Commercial/ Service Utilities	Education	Industrial	Institution	Residential	Unspecified/ Unknown	TOTAL
Marshall	737	48	7	55	6,132	8,173	15,152
Ohio	180	7	3	20	1,267	6,688	8,165
Wetzel	307	6	0	27	3,219	4,439	4,349
Totals	**1,224**	**61**	**10**	**102**	**10,618**	**15,651**	**27,666**

LOSS ESTIMATES

Loss estimates are prepared from the recent assessed property values obtained from the county assessors and shown in the Appendix F. No attempt is made to generalize these losses as the most loss from this hazard is emotional and the type and extent of a terror act cannot be predicted.

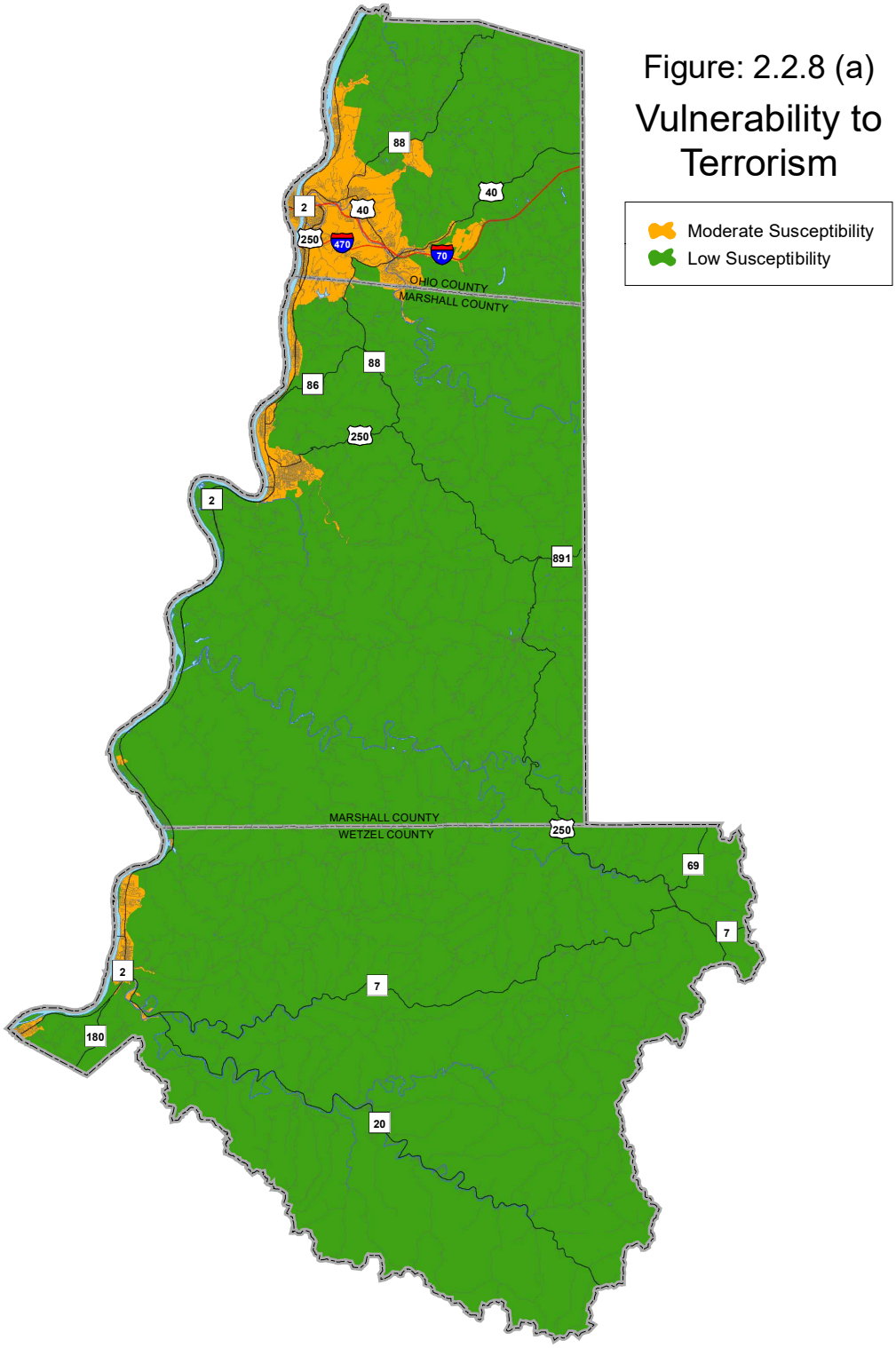


Figure: 2.2.8 (a)
Vulnerability to Terrorism
Moderate Susceptibility
Low Susceptibility
88
40
40
2
250
470
70
OHIO COUNTY
MARSHALL COUNTY
88
86
250
2
891
MARSHALL COUNTY
WETZEL COUNTY
250
69
7
2
7
180
20

2.2.9 THUNDERSTORM

A storm with thunder and lightning and typically also heavy rain or hail. As per National Weather Service (NWS), a severe thunderstorm produces a tornado, **winds of at least 58 mph** (50 knots or ~93 km/h), and/or **hail at least 1" in diameter**. Structural wind damage may imply the occurrence of a severe thunderstorm. A thunderstorm wind equal to or greater than 40 mph (35 knots or ~64 km/h) and/or hail of at least ½" is defined as approaching severe.

REGIONAL CONTEXT

Period of Occurrence:	Spring, summer, and fall
Number of Events to Date:	296
Probability of Event:	Frequent
Warning Time:	Minutes to hours
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems). Impacts human life, health, and public safety.
Causes Injury or Death:	Injury
Potential Facility Shutdown:	Days

HAZARD EFFECTS

All thunderstorms can produce severe turbulence, low level wind shear, low ceilings and visibilities, hail and lightning. Each of these hazards can be difficult to cope with; if all these conditions arrive at once, it can be disastrous. Understanding basic thunderstorm formation and structure can help you make safe decisions. Thunderstorms are formed by a process called convection, defined as the transport of heat energy. Because the atmosphere is heated unevenly, an imbalance can occur which thunderstorms attempt to correct. Three things are needed for convection to be a significant hazard to flight safety: moisture, lift and instability. Thunderstorms can produce tornados with little or no advance warning. Thunderstorms have caused catastrophic damages in the region.

HAZARD PROFILES

Thunderstorms are the most frequently-occurring hazard throughout the region. Storms are common throughout the spring and summer months, however a thunderstorm can occur in any season. Thunderstorms cause substantial damage that includes buildings and mobile homes, downed trees and power lines. Table 2.2.9(a) below illustrates the reported number of thunderstorm events in each of the region's counties as well as the damage caused by those storms.

TABLE 2.2.9(a)
THUNDERSTORMS AND REPORTED DAMAGE

County	*Number of Storms*	*Reported Damage*
Marshall	123	$1,223,079,640
Ohio	109	$1,951,344,600
Wetzel	64	$614,863,290
Totals	**296**	**$3,789,287,530**

VULNERABLE STRUCTURES

Thunderstorms can affect the entire area or only a few parts of the area. It is hard to predict what areas within the region are more prone to this hazard. For a worst-case scenario, it is assumed that the entire region can be affected by a thunderstorm and the Table 2.2.9(b) shows structures in each county. A regional map showing all three counties is included as Figure 2.2.2(a).

TABLE 2.2.9(b)
VULNERABLE STRUCTURES FOR THUNDERSTORMS

County	Commercial/ Service/Utilities	Education	Industrial	Institution	Residential	Unspecified/ Unknown	TOTAL
Marshall	291	15	49	61	5,513	10,600	16,529
Ohio	989	73	13	83	10,061	8,416	19,365
Wetzel	469	15	2	86	7,135	2,377	10,084
Totals	1,749	103	64	230	22,709	21,393	46,248

LOSS ESTIMATES

Thunderstorm is another hazard that can be said to affect the entire area equally (i.e., all structures in the planning area are at risk). As part of the loss estimates completed by the individual counties, the average county-level Worst-Case Scenario event could total $1,263,095,843 in losses. An area-wide WCS event could total as much as $3,789,287,530.

In many ways, the cascading effects of thunderstorms are more damaging than the storm itself. For example, as mentioned above, lightning strikes may cause power surges that result in damage. Thunderstorm winds may down trees that fall onto personal property. Tracking these types of damages is difficult as many people may not turn such claims into their insurance.

Reported thunderstorm events and associated losses are shown in Table 2.2.9(a).

2.2.10 WILDFIRE

A wildfire or wildland fire is a fire in an area of combustible vegetation that occurs in the countryside or rural area. Depending on the type of vegetation where it occurs, a wildfire can also be classified more specifically as a brush fire, bush fire, desert fire, forest fire, grass fire, hill fire, peat fire, vegetation fire, or veld fire.

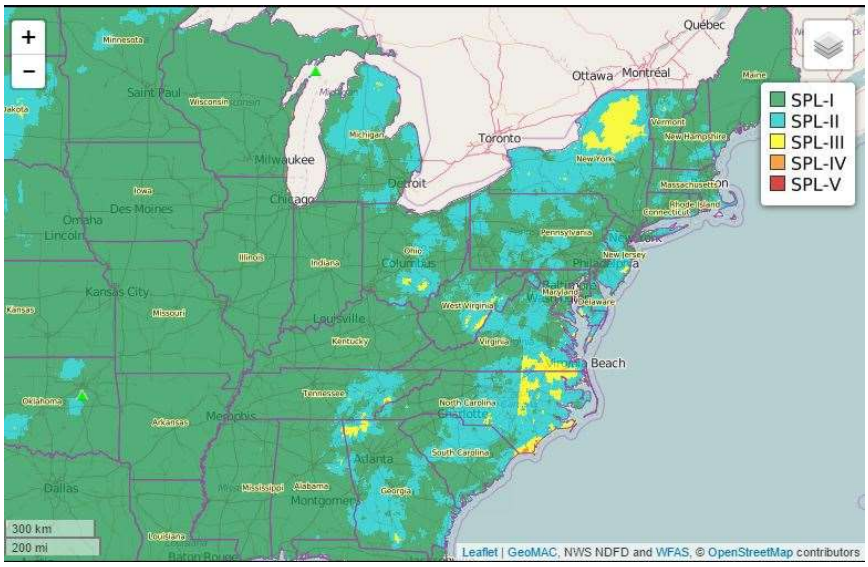
REGIONAL CONTEXT

Period of Occurrence:	At any time-Primarily summer
Number of Events to Date:	0
Probability of Event:	Improbable
Warning Time:	Minimal
Potential Impacts:	Impacts human life, health, and public safety. Loss of wildlife habitat, increased soil erosion, and degraded water quality. Utility damage and outages, infrastructure damage (transportation and communication systems), and damaged or destroyed critical facilities.
Causes Injury or Death:	Injury and risk death
Potential Facility Shutdown:	Days to weeks or more

HAZARD EFFECTS

Wildfires often begin unnoticed and spread quickly. They are usually signaled by dense smoke that fills the area for miles around. Grasses, bushes, trees, and other vegetation supply fuel for the wildfire. The size of a wildfire is contingent on the amount of fuel available, weather conditions, and wind speed and direction. In a map from the Wildland Fire Assessment System (WFAS)-Maps, Fire Behavior Research (see Figure 2.2.10(a), the majority of West Virginia was labeled as being at low risk for wildfires. The National Interagency Fire Center also indicates that the Northern Panhandle is at a low risk of wildfires. No wildfires have been reported in the planning area as shown in Figure 2.2.10(b) on the next page.

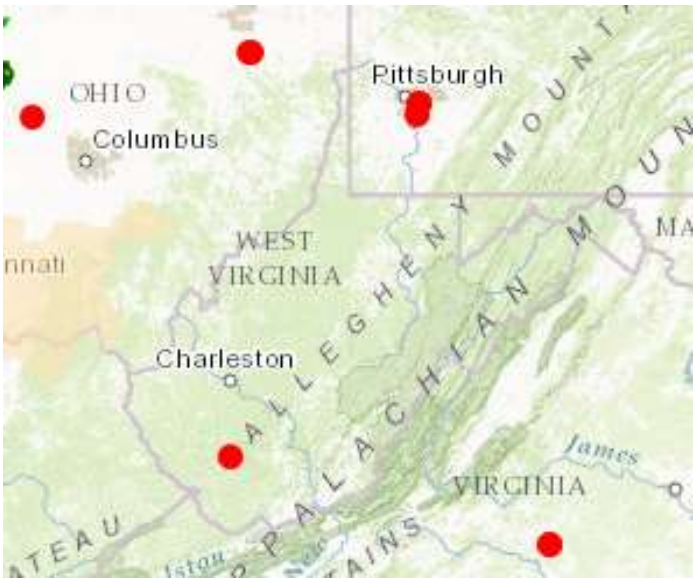
FIGURE 2.2.10(a)
WILDFIRE RISK AREAS



HAZARD PROFILES

Just because no wildfires have been reported, one should not assume that vegetation fires do not occur. Representatives from local fire departments throughout the area confirm that brush fires, ranging in size from a single acre to several acres occur each year. Many of these fires are extinguished before becoming a major problem. Additionally, most of these events occur in rural areas rather than in areas of urban-wildland interface. A map, included as Figure 2.2.10(c), shows the urban and rural areas in the region.

FIGURE 2.2.10(b)
HOT SPOT (NASA, not necessarily wildfire)
MODIS Thermal (Last 24 hours)



VULNERABLE STRUCTURES

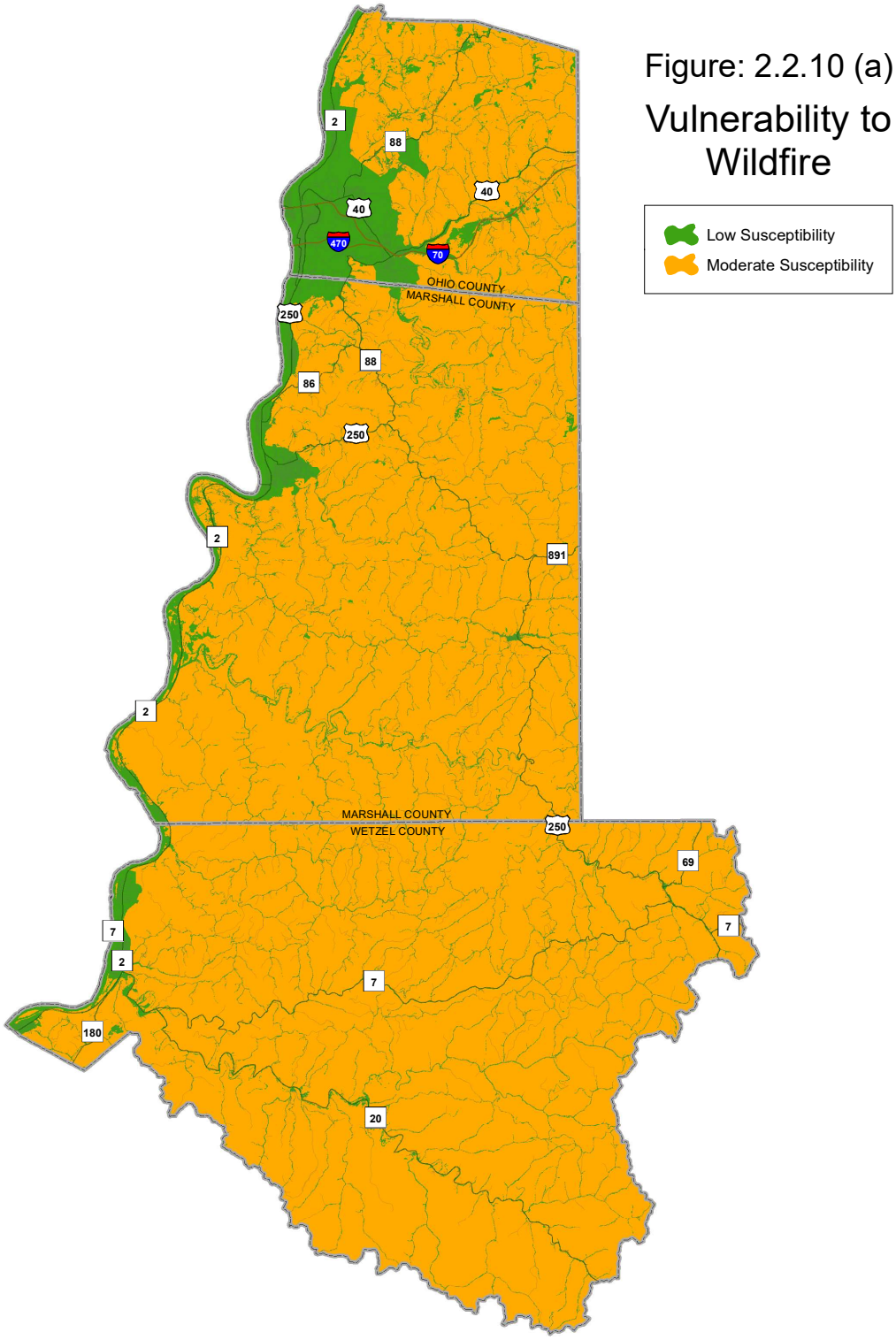
Structures in non-urbanized portions of the region are considered to be more vulnerable for this hazard and are shown in Table 2.2.10(a).

TABLE 2.2.10(a)
VULNERABLE STRUCTURES FOR WILDFIRES

County	Commercial/ Service/Utilities	Education	Industrial	Institution	Residential	Unspecified/ Unknown	TOTAL
Marshall	37	3	24	20	2,593	2,515	5,192
Ohio	114	1	0	9	2,397	118	2,639
Wetzel	42	2	2	26	2,410	785	3,267
Totals	193	6	26	55	7,400	3,418	11,098

LOSS ESTIMATES

Individual county loss estimates were calculated on the assumption that a wildfire could occur in an area of non-urbanized areas; consequently, the estimates could be considered high when compared to historical occurrences. The estimated Worst-Case Scenario for a single county could result in as much as $173,938,250 in losses; an area-wide WCS event is $521,814,750 in losses.



Source: 13 Anderson Fire Behavior Fuel Models from www.landfire.gov/fuel.php.

2.2.11 WIND/TORNADO

Wind storms are destructive wind events that occur with or without the presence of other storm events, such as tornados or severe thunderstorms. A tornado is a violently rotating column of air extending from a thunderstorm to the ground.

REGIONAL CONTEXT

Period of Occurrence:	At any time-Primarily during March through August
Number of Events to Date:	36 (3 tornado events)
Probability of Event:	Remote
Warning Time:	Minutes to hours
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, and damaged or destroyed critical facilities. Impacts human life, health, and public safety.
Causes Injury or Death:	Injury and risk of multiple deaths
Potential Facility Shutdown:	Days to weeks or more

WIND

A wind storm is a severe weather condition indicated by high winds and with little or no rain. Localized geographical conditions can exacerbate the damages from high winds and cause increases in wind intensity.

> *"Damaging winds are often called "straight-line" winds to differentiate the damage they cause from tornado damage. Strong thunderstorm winds can come from a number of different processes. Most thunderstorm winds that cause damage at the ground are a result of outflow generated by a thunderstorm downdraft. Damaging winds are classified as those exceeding 50-60 mph".*

HAZARD EFFECT

Winds can cause extensive damage. Damage from severe thunderstorm winds account for half of all severe reports in the lower 48 states and is more common than damage from tornadoes. Wind speeds can reach up to 100 mph and can produce a damage path extending for hundreds of miles. Since the three county region is prone to thunderstorms, it is also at risk for wind damage.

HAZARD PROFILES

Four events have resulted in significant damage as well as 0 known injuries. The Table 2.2.11(a) illustrates the high wind events, damages reported, and injuries known for each county.

TABLE 2.2.11(a)

WIND EVENTS IN THE REGION

County	Number of Events	Reported Damage	Known Injuries
Marshall	11	$1,223,079,640	0
Ohio	17	$1,951,344,600	0
Wetzel	8	$614,863,290	0
Total	36	$3,789,287,530	0

FEMA's wind zone map, included as Figure 2.2.11(a), shows that all three counties in the region are in wind zone III. Tornado frequency for the region is recorded in the tornado activity map (Figure 2.2.11(b).

FIGURE 2.2.11(a)

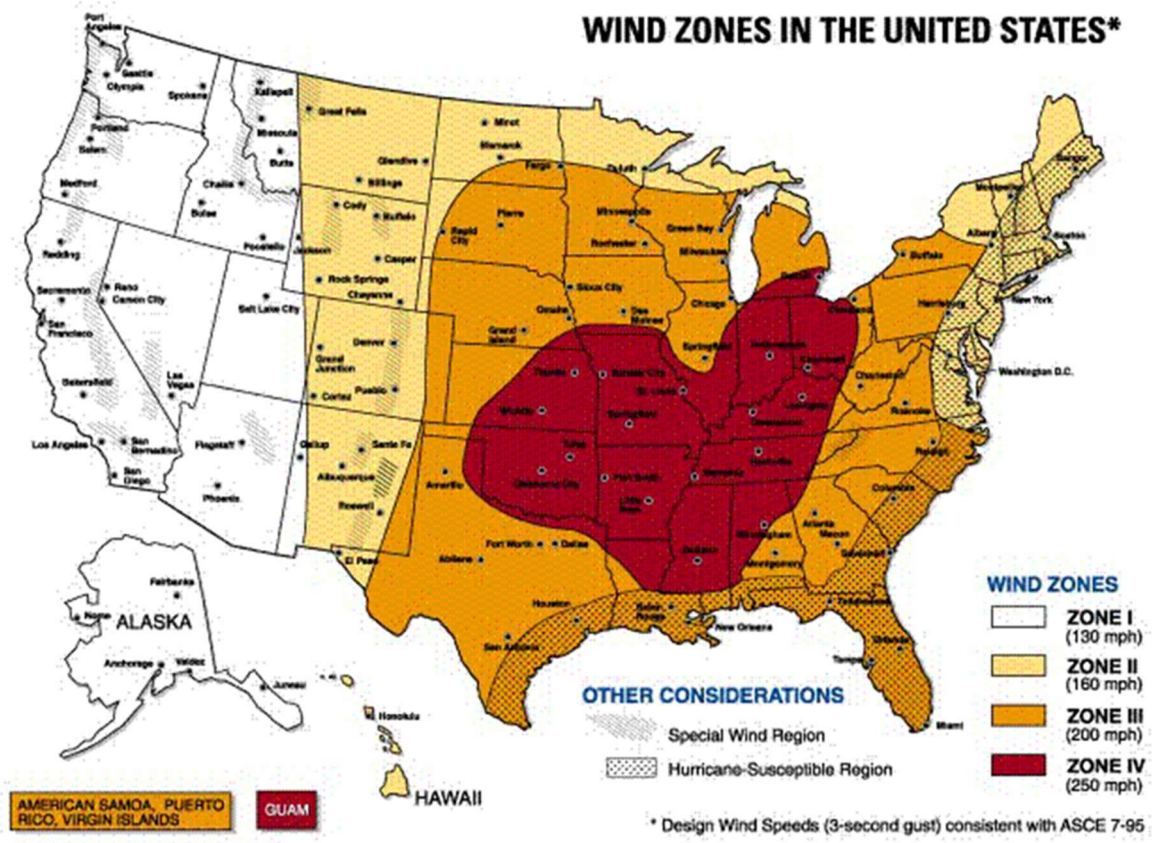


FIGURE 2.2.11(b)

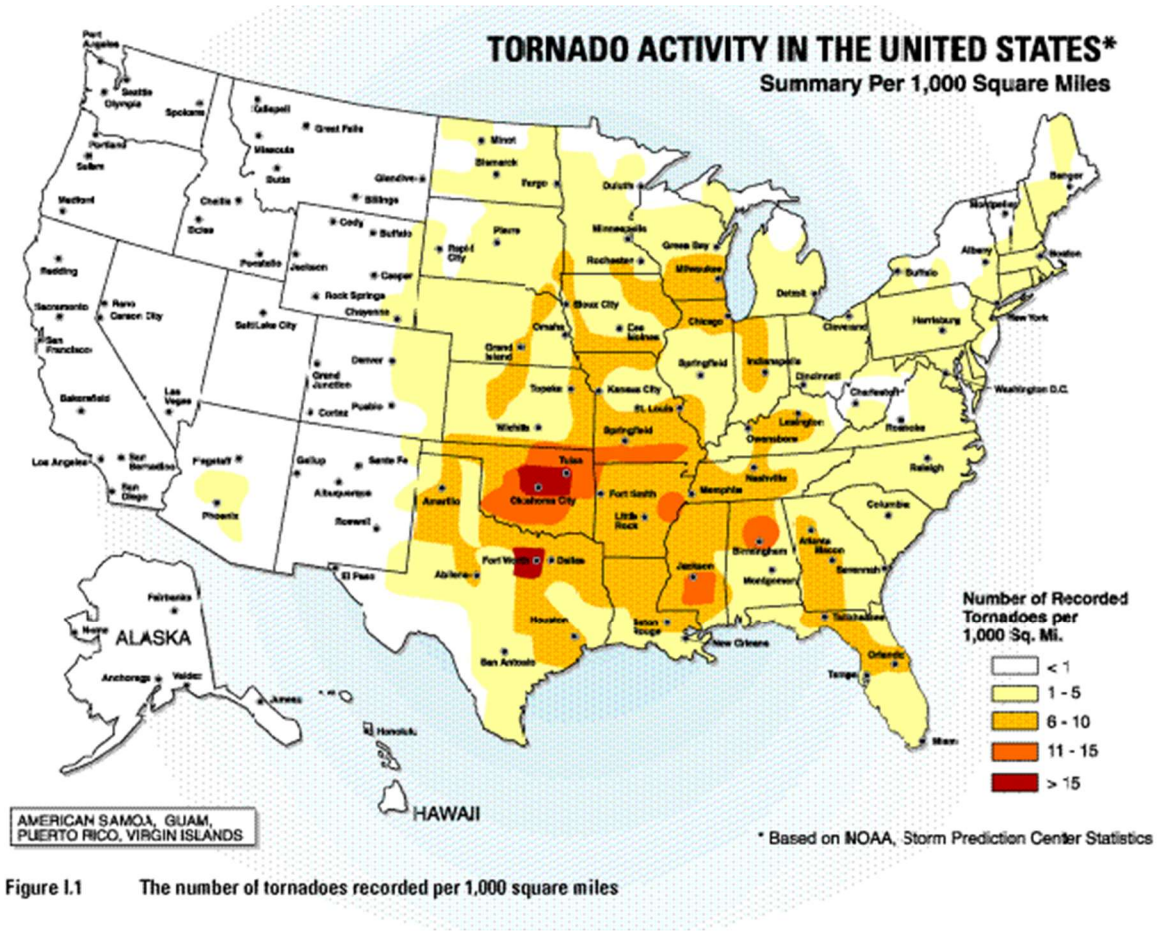


Figure I.1 The number of tornadoes recorded per 1,000 square miles

Using the wind zone and tornado frequency, the three-county area is at high risk for wind events as per FEMA's matrix included in the publication "Tornado Risks and Hazards in the Midwest United States".

Severe wind events can cause a variety of secondary, or cascading, hazard events. For instance, wind may blow limbs from trees down knocking out electric power or blocking roadways. Wind often results in damages to roofs and other home finishing's (such as siding, windows etc.). Wind events can be catastrophic for mobile homes and high center of gravity vehicles on the roadways.

VULNERABLE STRUCTURES

Wind events can happen anywhere in the region and can have wide swaths. Thus, all three counties are equally at risk. A regional map showing these counties is included as Figure 2.2.2(a). All structures can be vulnerable and are included in the Table 2.2.11(a).

TABLE 2.2.11(a)
STRUCTURES VULNERABLE TO WIND EVENTS

County	Commercial/ Service/Utilities	Education	Industrial	Institution	Residential	Unspecified/ Unknown	TOTAL
Marshall	291	15	49	61	5,513	10,600	16,529
Ohio	989	73	13	83	10,061	8,416	19,635
Wetzel	469	15	2	86	7,135	2,377	10,084
Totals	1,749	103	64	230	22,709	21,393	46,248

WIND EVENT: TORNADO

A violently rotating column of air, usually pendant to a cumulonimbus, with circulation reaching the ground. It nearly always starts as a funnel cloud and may be accompanied by a loud roaring noise. On a local scale, it is the most destructive of all atmospheric phenomena.

HAZARD EFFECT

The most violent tornados are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be in excess of one (1) mile wide and 50 miles long. Tornados are among the most unpredictable of weather phenomena. Tornados can occur in any state in the United States but are more frequent in the Midwest, Southeast, and Southwest.

HAZARD PROFILES

The nature of tornadoes is that they strike at random. While it is known that some areas of the county such as the "Tornado Alley", experience more tornadoes than others, predicting exactly what parts of the region have a greater chance of being struck by a tornado is difficult. The best predictor of future tornadoes is the frequency of tornados in the past. Since 1996 Ohio and Marshall Counties had two tornado events each while Wetzel County had only one. This is a low frequency event. However, based on the matrix developed by FEMA that uses wind zone classification and frequency of tornados, the area is at high risk for wind events. The three counties experienced 36 wind events and 5 tornados in the same span. Based on this historical data, the region has higher probability of wind events other

than tornados. Nonetheless a tornado can hit any place at any time in the region. The strength of tornados is measured using Fujita scale. The range on the scale is from F0 to F6. A F0 (Gale Tornado) has wind speeds of 40-70 MPH and causes damage that may include uprooting shallow root trees, break tree branches and cause damage to signs and chimneys. On the other end of scale a F6 (Inconceivable Tornado) can have wind speeds greater than 319 MPH and can cause unrecognizable catastrophic damage.

LOSS ESTIMATES

Estimates for all wind events are quite high due to frequency and damage caused by a single event. A tornado alone can cause damage that could easily run into several hundred million dollars and loss of life. All areas in the region are at risk for this hazard. Vulnerable structures for this event are shown in Table 2.2.11(a). A loss estimate table was not prepared due to a lack of information for this hazard.

2.2.12 WINTER STORM

An event in which the varieties of precipitation are formed that only occur at low temperatures such as snow or sleet, or a rainstorm where ground temperatures are low enough to allow ice to form.

REGIONAL CONTEXT

Period of Occurrence:	Winter
Number of Events to Date:	79
Probability of Event:	Probable
Warning Time:	Snow-Days Ice-Minutes to hours
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, damaged critical facilities. Can cause severe transportation problems and make travel extremely dangerous. Power outages, which result in loss of electrical power and potentially loss of heat. Extreme cold temperatures may lead to frozen water mains and pipes, damaged car engines, and prolonged exposure to cold resulting in frostbite.
Causes Injury or Death:	Injury
Potential Facility Shutdown:	Days

HAZARD EFFECTS

Winter storms can occur anywhere and bring freezing rain, ice, snow, high winds or a combination of all these conditions. They can cause power outages that last for days or weeks; making it hard to keep warm and making travel very dangerous. Winter storms vary in size and strength and can be accompanied by strong winds that create blizzard conditions and dangerous wind chill. There are three (3) categories of winter storms:

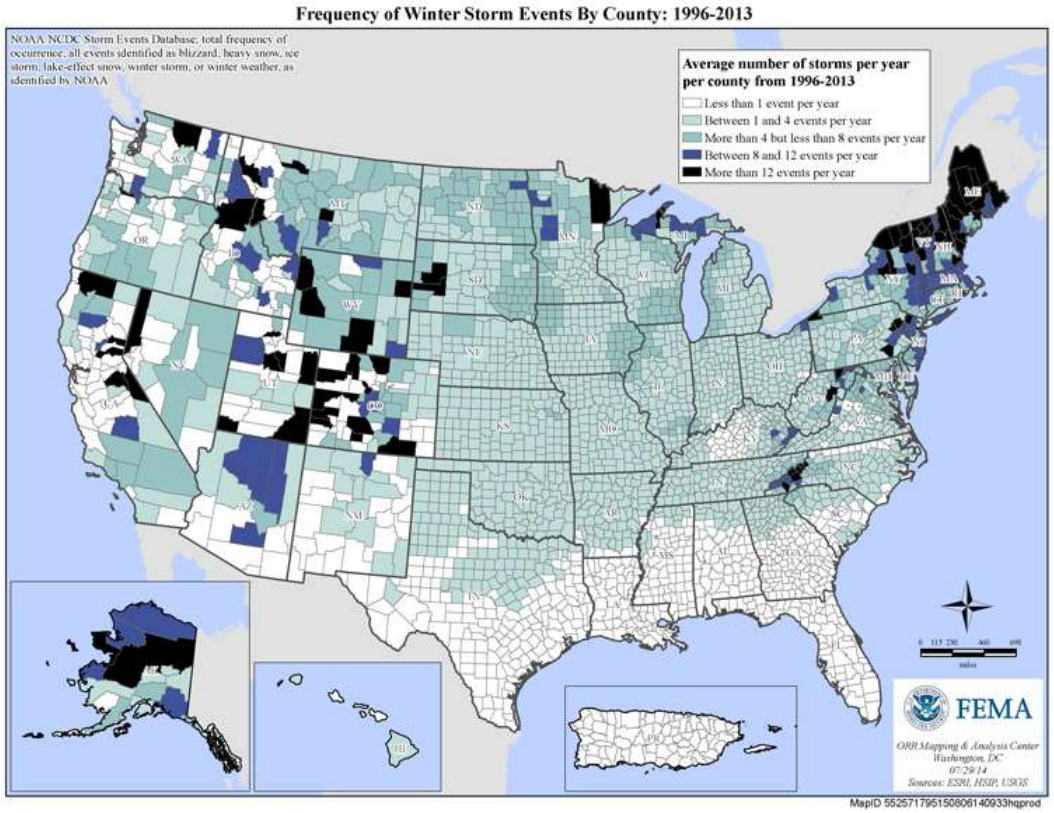
- **Blizzard:** A blizzard is the most dangerous of all winter storms. It combines low temperatures, heavy snowfall, and winds of at least 35 miles per hour (mph), reducing visibility to only a few years.
- **Heavy Snowstorms:** A heavy snowstorm is one that drops four (4) or more inches of snow in a 12-hour period.
- **Ice Storm:** An ice storm occurs when moisture falls and freezes immediately upon impact.

HAZARD PROFILES

Winter storms are reported to be one of the most frequently occurring hazards in the planning area (along with thunderstorms, floods, and hailstorms). The number of winter storm (i.e., snow, ice, and blizzard) events in each county and the associate damage is shown in Table 2.2.12(a). Winter storms can occur at any time from late autumn to early spring in our region.

A map showing the frequency of winter storms in the country is shown in Figure 2.2.12(a). As per this map, the three-county region averaged 1 to 4 winter storms every year during the span of eighteen years. Local data also supports this frequency. More than four events can occur, but based on historical data, preparations should be made for at least four events.

FIGURE 2.2.12(a)



LOSS ESTIMATES

Reported damage for winter storms and the associated number of events are presented in Table 2.2.12(a).

TABLE 2.2.12(a)
WINTER STORM EVENTS 1996 – 2016

County	Number of Events	Amount of Property Damage
Marshall Co.	4	$35,000
Ohio Co.	5	$15,000
Wetzel Co.	4	$15,000
Totals	13	$65,000

Source: National Center for Environmental Information

As part of the loss estimates completed by the individual counties, the average county-level Worst-Case Scenario event could total $1,263,095,843 in losses. An area-wide event, according to the county assessor's office, could total as much as $3,789,287,530.

VULNERABLE STRUCTURES

It is hard to predict how widespread a winter event would be. All three counties are vulnerable to this hazard and are shown in a regional map included as Figure 2.2.2(a). Thus, all structures in each county are included in Table 2.2.12(b).

TABLE 2.2.12(b)
STRUCTURES VULNERABLE TO WINTER STORMS

County	Commercial/ Service/Utilities	Education	Industrial	Institution	Residential	Unspecified/ Unknown	TOTAL
Marshall	291	15	49	61	5,513	10,600	16,529
Ohio	989	73	13	83	10,600	8,416	19,635
Wetzel	469	15	2	86	7,135	2,377	10,084
Totals	1,749	103	64	230	22,709	21,393	46,248

2.2.13 HYDRAULIC FRACTURING (Fracking)

Hydraulic fracturing is a technique in which a liquid is injected under high pressure into a well in order to create tiny fissures in the rock deep beneath the surface of earth which then allow gas and oil to flow into the well.

This is a beneficial economic activity for the region. The risks associated with fracking are well fires, chemical spills, earthquakes and ground water contamination.

REGIONAL CONTEXT

Period of Occurrence:	Fracking
Number of Events to Date:	Anytime
Probability of Event:	Remote
Warning Time:	Minimal to none.
Potential Impacts:	Well fires; air pollution; health hazards; water contamination; spot low intensity earthquakes.
Causes Injury or Death:	Injury
Potential Facility Shutdown:	Well fire can take more than a week to burn out.

HAZARD EFFECTS

The local area has experienced well fires and chemical spills. Earthquakes in Oklahoma and California have been associated with fracking. Ground water contamination is also suspected from this activity. Oklahoma has seen extensive fracking activity for many years. Several low intensity earthquakes have occurred in Oklahoma. According to the TV show 60 minutes aired on May 8, 2016 “Before 2009, there were, on average, two earthquakes a year in Oklahoma that were magnitude 3 or greater. Last year, there were 907.” However, a 4.3 earthquake was recorded in Edmond, Oklahoma in December, 2015. This earthquake caused property damage. The byproduct of fracking is brine water in large quantities. This water is pumped back in deep injection wells. According to Mark Zoback, a professor of geophysics at Stanford University, “What we've learned in Oklahoma is that the earthquakes that are occurring in enormous numbers are the result of wastewater injection”.

The region has numerous active wells and many more permitted wells yet to be drilled. The number and location of injection wells in the region is not available at this time. Area has experienced well fires and spills. Well fires can burn for several days and cause air pollution and environmental hazards.

HAZARD PROFILE

All counties in the region have active wells and permitted wells. Each well produces brine water as the byproduct of this natural gas and oil extraction activity. Fracking regulations prevent this activity in and around the high density residential areas. Environment in the immediate vicinity of the well site is affected during the drilling phase and in case of a mishap such as well fire. The injection well area of influence, in case of an earthquake, will be much larger. A map showing location of active and permitted wells with two-mile radius around each well is included as Figure 2.2.13(a). The population within the two-mile radius is more vulnerable to environmental hazards due to this activity. The two-mile radius is used to identify structures and population in the immediate vicinity of each well. The two-mile radius is used as horizontal fracking, generally occurs with two-mile radius of the well core.

VENERABLE POPULATION

The venerable structures and population in the immediate vicinity of each well is shown in Table 2.2.13(a).

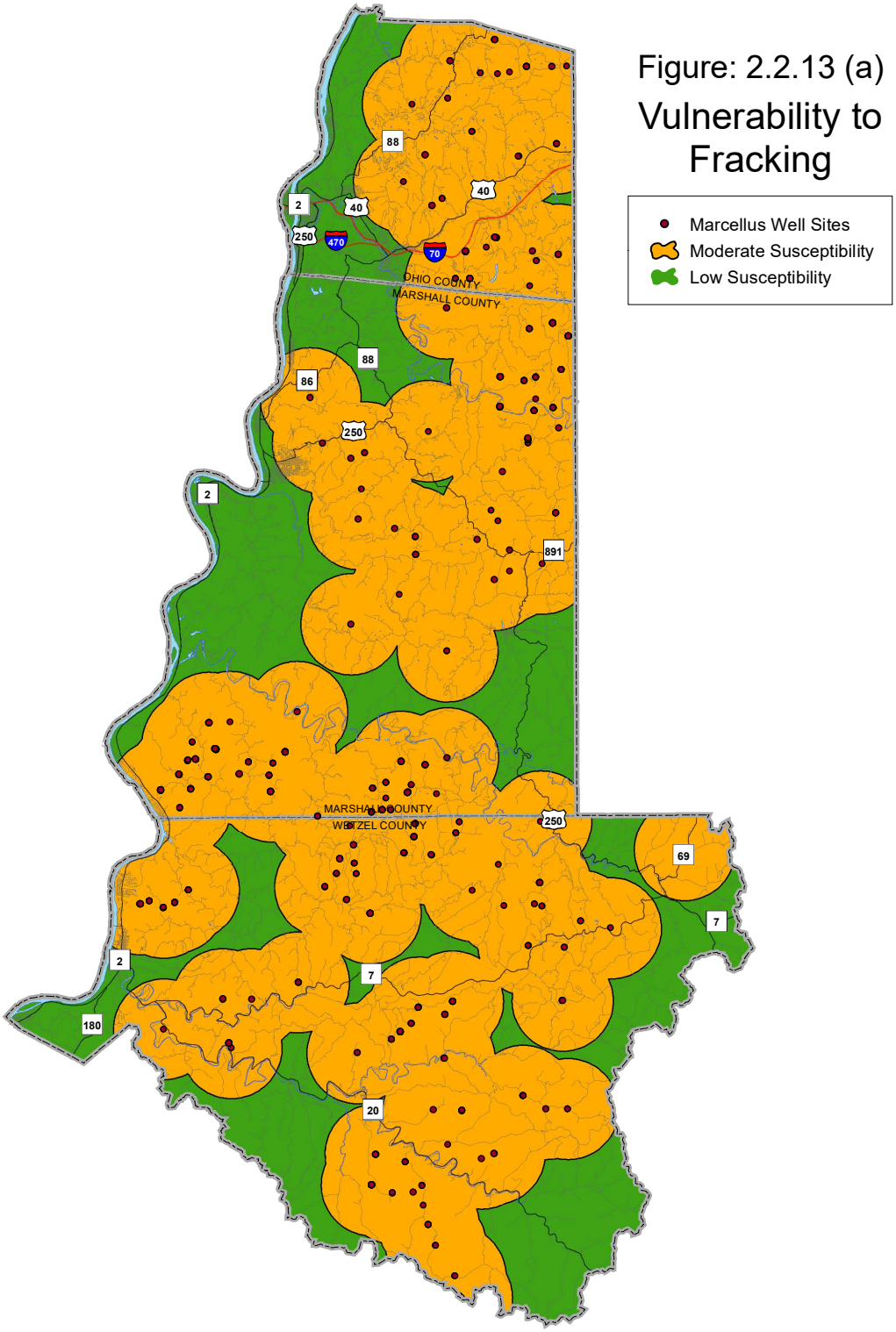
TABLE 2.2.13(a)

STRUCTURES AND POPULATION IN THE VICINITY OF WELLS

County	Commercial/ Service/Utilities	Education	Industrial	Institution	Residential	Unspecified/ Unknown	TOTAL	# of Persons		
								In Community	In Hazard	% in Hazard
Marshall	83	6	30	36	2,810	5,821	8,786	33,107	17,708	53%
Ohio	402	25	7	30	4,455	832	5,751	44,443	14,111	32%
Wetzel	321	10	1	55	4,428	1,045	5,860	16,583	9,997	60%
Totals	806	41	38	121	11,693	7,698	20,397	94,133	41,816	44%

LOSS ESTIMATES

The loss due to this hazard is environmental. It affects health and wellbeing of people living near the wells. It is not known to directly cause loss of life or property damage. In excess of forty thousand persons are at risk due to a well mishap. Many more will be susceptible to well fires and chemical spills.



Source: Oil and Gas Permits http://tagis.dep.wv.gov/home/node/21

2.2.14 POTENTIAL FUTURE HAZARDS

Technology related changes are occurring at a dizzying pace. The policies to make these changes safer and risk free have lagged. Rapid deployment of autonomous and/or connected vehicles or package delivery by drones or controlling home environments from a remote control are all positive innovations that are poised to pay dividends in the foreseeable future. However, given the history and recent cyberattacks on high profile locations, it cannot be overlooked that the new technology applications will also have associated risk. The potential hazards and their severity is not known at this time. However, it is imperative that the local discussion and/or planning to mitigate any conceivable hazard from these applications begin as soon as possible.

2. 3 SUMMARY OF HAZARD IMPLICATIONS

Hazard profiles presented in this report show that some hazards have regional implications while others are spot or corridor type of hazards with localized damages. Some hazards such as hazardous material incidence can be spot hazards if it involves a spill on a roadway or a corridor type of hazard affecting locations in the vicinity of a roadway if a plume is involved. Some hazards can happen anywhere in the region such as a thunderstorm or winter storm. Areas in the flood zones can be vulnerable to riverine floods and flash flooding can happen in the hollows with or without a creek.

Area is most vulnerable to recurring floods that have caused substantial property damages in the past. Flash flooding along creeks although affects properties in its path but can also cause riverine flooding as water causing the flash floods flows in the Ohio River. A failure of any dam structure in the region can also cause flooding. The age of dam structures on the Ohio River is also a concern locally.

Ohio County is home to a major east west travel corridor from Baltimore to near I-15 in Utah. It carries heavy truck traffic and hazardous materials are transported on this interstate. In addition, petroleum and chemical products move on the Ohio River. Area is also home to chemical and power plants. Power plants and chemical plants are located on West Virginia route 2. Any incidence at a plant or on route 2 will greatly affect travel in this corridor. Route 2 is used for the north-south travel in the region. Recently many natural gas wells and injection wells have been introduced to the local landscape. While all these facilities are vital for the local economy and regional vibrancy they do have associated risks.

A large-scale disaster event can easily cross multiple jurisdictions. The unpredictability of an event requires a dynamic plan that can change instantaneously with the type and scale of the event. Local plans are expected to address, among other things, the logistics of service delivery, inventory of local resources, critical supply chains and locations for dispensing essential goods. The Emergency Management Agency in each county prepares such a plan. In addition to EMA offices, a Northern Ohio River Industrial Mutual Aid Council also exist in the area. This council is responsible for any evacuation related to events at plants along the Ohio River. These plans are part of hazard mitigation efforts.

CHAPTER 3.0 GOALS AND OBJECTIVES

Goals and objectives for this plan are developed in consultation with the Emergency Management Agency of each county and other stakeholders. The goals and objectives from the previous plan were used to initiate the process for developing goals and objectives that are current and address the local needs. Goals and objectives from the previous plan were revised as far as the input received from the EMA directors and other stakeholders. The goals and objectives of this plan are presented below.

Goal 1: Reduce the negative effects of weather related hazards.

Objectives:

1.1: Minimize future flood damage by coordinating with other agencies and reassessing future development in the floodplain.

1.2: Minimize future flood damage in local jurisdictions through effective storm water management.

1.3: Develop and distribute public awareness/readiness materials about natural hazard risks, preparedness, and mitigation.

1.4: Evaluate and update existing floodplain ordinances to meet or exceed the NFIP standards.

1.5: Encourage participation in the National Flood Insurance Program.

1.6: Update flood hazard mapping.

1.7: Upgrade warning capabilities.

1.8: Increase public awareness.

1.9: Periodically review emergency operations plans (EOPs) for adequacy of resources to mitigate effects of weather-related events.

Goal 2: Reduce the effects of land subsidence.

Objectives:

2.1: Minimize potential subsidence by monitoring development and construction activities.

2.2: Develop database of underground mines and fracking wells.

Goal 3: Reduce the potential effects of earthquakes.

Objectives:

3.1: Educate the public as to the potential for earthquakes in West Virginia and the region.

3.2: Monitor areas in the vicinity of injection wells for seismic activity.

Goal 4: Protect the citizens and forests from wildfires.

Objectives:

4.1: Educate the public on wildfire safety.

Goal 5: Protect the general public from hazardous material incidents.

Objectives:

5.1: Collect/obtain data on hazardous materials traveling on roadways.

5.2: Collect/obtain data on hazardous material production/storage facilities in the region.

5.3: Obtain necessary training for mitigating a hazardous event.

5.4: Prepare database of collection, separation, and fractionation facilities in the region.

5.5: Review EOP plans periodically.

Goal 6: Protect the general public from potential terrorist acts.

Objectives:

6.1: Increase preparedness for terrorist attacks.

Goal 7: Mitigate the effects of dam failures.

Objectives:

7.1: Assess and monitor the risk of dam failures.

7.2: Working with the WVDEP and U.S. Army Corps of Engineers, develop early warning capabilities.

7.3: Identify potential area of inundation and properties in this area.

Goal 8: Mitigate miscellaneous hazards as they emerge.

Objectives:

8.1: Work with community partners to educate residents about general public safety issues.

8.2: Monitor emergence of potential hazards.

8.3: Periodically review emergency operations plans (EOPs) to assess readiness for emerging hazards.

CHAPTER 4.0 MITIGATION STRATEGIES AND ACTIONS

This document guides the mitigation efforts in the region. During the update cycle of this plan, many opportunities were provided to the public at large and local jurisdictions to shape this update. Each local jurisdiction was asked to review previously identified projects, priorities and status of each project within their jurisdiction. They were also asked to identify any new action/project needed in the foreseeable future. Potential funding sources for the projects are identified in consultation with the EMA directors. It should be noted that among other things, service related actions such as provision of emergency shelters, basic supplies, getting people to shelters, etc., are considered to be a part of the collaborative planning by EMA directors and first responders. The mitigation projects /actions presented in the tables below are the culmination of local outreach effort conducted by Belomar Regional Council.

The strategies/actions presented are consistent with the goals and objectives of this plan. These generally fall in the following seven categories:

1) Prevention
2) Property Protection
3) Natural Resource Protection
4) Structural Projects
5) Emergency Services
6) Public Education and Awareness
7) Mitigation Reconstruction

It should be noted that the local jurisdictions have been involved with the hazard mitigation prior to the preparation of Regional Hazard Mitigation Plans. The regional plans have provided opportunities for a comprehensive approach to planning, resources allocation, equipment acquisitions, compatible communications and movement of resources among jurisdictions with minimal delay.

The following table shows locally selected mitigation projects/actions. Each project can address multiple goal and objectives. Goal and objectives addressed by each project are included in this table. Also included are potential performance measures that may be used in measuring the progress towards achieving the goals and objectives.

All projects at the County level are unique, however most of the projects also apply to the municipalities within the County. It was the discretion of the municipality, based on the needs, to identify applicable projects. In most cases, municipalities found that the countywide projects also address their needs. Thus, most of the projects selected and prioritized by the municipalities are repeat projects from the countywide project list. However, the priority of each project within the municipality is different from the countywide priority.

PROJECTS/ACTIONS BY JURISDICTION

Project #	Applies to Goal	Applies to Objective	Performance Measure
MARSHALL COUNTY			
MAR – 1: Attempt to instate a countywide permitting process through the planning commissions and assessor's office, which will require residents and/or developers to file a permit with the county before beginning any new construction in the floodplain.	1, 7	1.1, 1.2, 1.4, 1.5, 1.7	Progress towards a countywide building permit process.
MAR – 2: Review additional permitting processes used in other counties to determine if wording regarding the use of certain building materials is appropriate in the county floodplain ordinance.	1, 7	1.1, 1.2, 1.4, 1.5, 1.7	Periodic review of floodplain ordinance.
MAR – 3: Continue to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	1, 7	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 7.1, 7.2, 7.3	Progress towards initiating a study.
MAR – 4: Continue to undertake stream cleaning and stream bank restoration projects throughout the county as a means of lessening flood damage to personal property and roadways.	1, 7	1.1, 1.2	Steam cleaning/bank restoration actions.
MAR – 5: Form a community watershed group to look at stream bank restoration in the Cameron area.	1, 7	1.1, 1.2, 1.8	A functioning watershed group.
MAR – 6: Form a community watershed group to look at stream bank restoration in the Jims Run area of McMechen.	1, 7	1.1, 1.2, 1.8	A functioning watershed group.

Project #	Applies to Goal	Applies to Objective	Performance Measure
MAR – 7: Form a community watershed group to look at stream bank restoration in the Little Grave Creek Watershed.	1, 7	1.1, 1.2, 1.8	A functioning watershed group.
MAR – 8: Coordinate county efforts to meet the requirements of becoming a participant in the CRS.	1, 7	1.1, 1.2	Participation in CRS user group.
MAR - 9: Continue projects to upgrade the floodwall in the City of Benwood.	1, 7	1.1, 1.2	A well-maintained flood wall.
MAR – 10: Develop early warning and public notification capabilities through the use of such items as "Reverse 911" and AM radio stations.	1, 3, 4, 6, 7	1.3, 1.7, 3.1, 4.1, 6.1, 7.2	Status of early warning systems.
MAR – 11: Continue to coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending severe thunderstorm conditions.	1, 2	1.7, 1.8, 2.1	Level of coordination.
MAR – 12: Continue coordinating efforts with local media to post advance warnings of hailstorms.	1	1.7, 1.8	Coordination with media.
MAR – 13: Ensure inclusion of wind hazards in public information campaigns.	1, 4	1.3, 1.8, 4.1	Public awareness material/events.
MAR – 14: In coordination with monitoring floodplain development, continue to encourage the general public to use materials that can withstand moderate land subsidence during construction.	1, 4	1.1, 1.2, 1.3, 1.5, 1.8, 2.1	Public awareness outreach.

Project #	Applies to Goal	Applies to Objective	Performance Measure
MAR – 15: Educate the public as to the earthquake risk in West Virginia. Dissemination of informa8tion can be via elementary school distribution.	2, 3	2.1, 2.2, 3.1, 3.2	Public awareness outreach.
MAR – 16: Distribute informational brochures developed by the NRCS to local farmers and residents.	1, 3, 4, 6, 8	1.3, 1.8, 3.1, 3.2, 4.1, 6.1, 8.1	Public awareness outreach.
MAR – 17: Educate local residents on the benefits of conserving water.	1, 3, 5, 6, 8	1.2, 1.8, 3.1, 6.1, 8.1	Public awareness outreach.
MAR – 18: Distribute information concerning the leading causes of wildfires, steps the general public can take to avoid starting wildfires, and instructions for controlled burns.	4	4.1	Public awareness outreach.
MAR – 19: Produce public awareness campaigns through local media.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 6.1, 8.1	Public awareness outreach.
MAR – 20: Continue pandemic flu planning efforts.	8	8.1, 8.2, 8.3	Preparedness for mitigation.
MAR – 21: Strengthen existing landline communication networks.	1, 2, 3, 4, 5, 6, 7, 8	1.3, 1.7, 1.8, 3.1, 3.2, 4.1, 6.1, 7.2, 8.1, 8.2	Functioning communication network.
MAR – 22: Continue efforts to construct towers to facilitate better cellular and wireless communications.	1, 2, 3, 4, 5, 6, 7, 8	1.3, 1.7, 1.8, 3.1, 3.2, 4.1, 6.1, 7.2, 8.1, 8.2	Functioning communication network.

Project #	Applies to Goal	Applies to Objective	Performance Measure
MAR – 23: Once towers are constructed, negotiate with owners to use towers during emergency situations.	1, 2, 3, 4, 5, 6, 7, 8	1.3, 1.7, 1.8, 3.1, 3.2, 4.1, 6.1, 7.2, 8.1, 8.2	Functioning communication network.
MAR – 24: Undertake a public education campaign regarding proper generator usage.	1, 2, 3, 4, 5, 6, 7, 8	1.1, 1.2, 1.3, 1.5, 1.8, 2.1	Public awareness outreach.
MAR – 25: Encourage local gas companies to undertake a public education campaign regarding resident and company rights surrounding gas-line rights-of-way.	1, 2, 3, 4, 5, 6, 7, 8	1.1, 1.2, 1.3, 1.5, 1.8, 2.1	Public awareness outreach.
MAR – 26: Work with sheltering agencies to ensure that those facilities identified as shelters have back-up power capabilities.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 6.1, 8.3	Emergency shelter readiness.
MAR – 27: Coordinate with AEP to ensure adequate coverage for emergency call-outs in the event of a downed electric line.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 6.1, 8.3	Adequate resources for restoring power.
MAR – 28: Coordinate with law enforcement providers and appropriate event organizers to ensure that adequate security is available during large of high-profile events.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 6.1, 8.3	Adequate staffing for events.
MAR - 29: Update the commodity flow study for Marshall County.	5	5.1, 5.2, 5.3	A list of hazardous materials transported in-out and through the region.

Project #	Applies to Goal	Applies to Objective	Performance Measure
MAR – 30: Ensure measures and tips for evacuations are included in ongoing public education efforts.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Periodic review of EMS plans.
MAR – 31: Facilitate the creation of safe zones as places where residents can go in the in the event of a hazardous materials incident. Further, publicize the location and access to these safe zones.	5	5.3, 5.5	Existence of safe zones within EMS plans.
MAR – 32: Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	5, 6, 8	5.5, 6.1, 8.3	Existence of EMS and loop plans.
MAR – 33: Increase the knowledge of the general public concerning preparedness through the preparation of informational brochures, town meetings, training seminars, etc.	1, 2, 3, 4, 5, 6, 7, 8	1.3, 1.8, 3.1, 3.2, 4.1, 6.1, 8.1, 8.2	Public awareness outreach.
MAR – 34: Coordinate with local media to alert the public as to current threat status.	1, 2, 3, 4, 5, 6, 7, 8	1.3, 1.8, 3.1, 3.2, 4.1, 6.1, 8.1, 8.2	Emergency announcements.
MAR – 35: Establish trauma centers to offer medical attention and counseling to affected populations in the event of a terrorist event.	5, 6, 8	5.5, 6.1, 8.3	Preparedness for a large-scale emergency event.

Project #	Applies to Goal	Applies to Objective	Performance Measure
MAR – 36: Coordinate with first responders for interagency cooperation to assist in collaborative planning.	1, 2, 3, 4, 5, 6	1.9, 5.5, 8.3	Periodic review of EMS plans.
MAR – 37: Continue education and training efforts of first responders and emergency personnel.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 8.3	Training opportunities for first responders.
MAR – 38: Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Existence of SNS as per EMS plans and health plans.
MAR – 39: Continue to encourage schools to update procedural and evacuation plans in the event of a bomb threat.	6, 8	1.9, 5.5, 9.3	Existence of school evacuation and lock down plans.
MAR – 40: Encourage high value assets to create and/or update procedural and evacuation plans in the event of a bomb threat.	6.8	1.9, 5.5, 9.3	EMS plans addressing bomb threat.
MAR – 41: Evaluate dams and locks that play an integral role in water transportation and/or flood control.	7	7.1, 7.2, 7.3	Working relationship with U.S. Corp. of Engineers.
MAR – 42: Encourage drilling companies to educate the general public about natural gas safety, community outreach efforts, etc.	5	5.4, 5.5	Outreach efforts by energy corporations.

Project #	Applies to Goal	Applies to Objective	Performance Measure
MAR – 43: County will continue to seek out opportunities to apply for Hazard Mitigation Assistance (HMA) funds for mitigation reconstruction, elevations, relocations or acquisitions of identified at risk, repetitive loss, non-repetitive loss, substantial damaged, partially or completely demolished or destroyed properties within Marshall County. If mitigation reconstruction is chosen, properties identified as partially or completely demolished, outside of the regulatory floodway, as identified by available flood hazard data, will be reconstructed in accordance with the standards established in the local floodplain ordinance and in accordance with the same conditions as an elevated structure. Marshall County will comply with all acquisition, elevation, relocation and mitigation reconstruction requirements, as per the HMA Guidance.	1, 7	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.8, 7.1, 7.2, 7.3	Solicitation of HMA funds; identification/acquisition of properties; reconstruction as per flood plain ordinance.
BENWOOD			
BEN – 1: Continue projects to maintain upgrade the floodwall in the City of Benwood.	1, 7	1.1, 1.2	A well-maintained flood wall.
BEN – 2: Coordinate with first responders for interagency cooperation to assist in collaborative planning.	1, 2, 3, 4, 5, 6, 8	1.6, 1.7, 1.9, 2.2, 5.4, 6.1, 7.2, 8.3	Periodic meeting/communication with other jurisdictions, current plans.
BEN – 3: Support health department planning for Strategic National Stockpile distributions during bioterrorist or other incidents.	5, 6, 8	5.3, 6.1, 8.2, 8.3	Necessary stockpile for mitigation.

Project #	Applies to Goal	Applies to Objective	Performance Measure
CAMERON			
CAM – 1: Continue to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	1	1.1, 1.4, 1.5, 1.6, 1.9	Study recommendations for action.
CAM – 2: Form a community watershed group to look at stream bank restoration in the Cameron area.	1	1.1, 1.2	Actions for stream bank restoration.
CAM – 3: Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	6, 8	6.1, 8.1, 8.2, 8.3	COOP plans for Cameron.
CAM – 4: Coordinate with first responders for interagency cooperation to assist in collaborative planning.	1, 2, 3, 4, 5, 6, 7, 8	1.6, 1.7, 1.9, 2.2, 5.4, 6.1, 7.2, 8.3	Periodic meetings/communication with other jurisdictions; current plans.
CAM – 5: Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	5, 6, 8	5.3, 6.1, 8.2, 8.3	Necessary stockpile.
GLEN DALE			
GLE – 1: Continues to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	1	1.1, 1.4, 1.5, 1.6, 1.9	Study recommendations for action.
GLE – 2: Form a community watershed group to look at stream bank restoration in the Little Grave Creek Watershed.	1	1.1, 1.2	Actions for stream bank restoration.

Project #	Applies to Goal	Applies to Objective	Performance Measure
GLE – 3: Coordinate with first responders for interagency cooperation to assist in collaborative planning.	1, 2, 3, 4, 5, 6, 7, 8	1.6, 1.7, 1.9, 2.2, 5.4, 6.1, 7.2, 8.3	Periodic meetings/communication with other jurisdictions; current plans.
GLE – 4: Support healthy department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	5, 6, 8	5.3, 6.1, 8.2, 8.3	Necessary stockpile.
MCMECHEN			
MCM – 1: Continue to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	1	1.1, 1.4, 1.5, 1.6, 1.9	Study recommendations for action.
MCM – 2: Form a community watershed group to look at stream bank restoration in the Jims Run area of McMechen.	1	1.1, 1.2	Actions for stream bank restoration.
MCM – 3: Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	6, 8	6.1, 8.1, 8.2, 8.3	COOP plans for Cameron.
MCM – 4: Coordinate with first responders for interagency cooperation to assist in collaborative planning.	1, 2, 3, 4, 5, 6, 7, 8	1.6, 1.7, 1.9, 2.2, 5.4, 6.1, 7.2, 8.3	Periodic meetings/communication with other jurisdictions; current plans.
MCM – 5: Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	5, 6, 8	5.3, 6.1, 8.2, 8.3	Necessary stockpile.

Project #	Applies to Goal	Applies to Objective	Performance Measure
MOUNDSVILLE			
MDS – 1: Coordinate with law enforcement providers and appropriate even organizers to ensure that adequate security is available during large or high-profile events.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 6.1, 8.3	Adequate staffing for events.
MDS – 2: Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	6, 8	6.1, 8.1, 8.2, 8.3	COOP plans for all jurisdictions.
MDS – 3: Coordinate with first responders for interagency cooperation to assist in collaborative planning.	1, 2, 3, 4, 5, 6, 7, 8	1.6, 1.7, 1.9, 2.2, 5.4, 6.1, 7.2, 8.3	Periodic meetings/communication with other jurisdictions; current plans.
MDS – 4: Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	5, 6, 8	5.3, 6.1, 8.2, 8.3	Necessary stockpile for mitigation.
MDS – 5: Law enforcement to work to develop a plan for oil, natural gas and chemical safety training.	2, 3, 5, 6, 8	5.3, 6.1, 8.3	Training opportunities provided.

Project	Applies to Goal	Applies to Objective	Performance Measure
OHIO COUNTY			
OHI – 1: Create displays for use at public events (health fair, public awareness day, county fair).	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
OHI – 2: Create materials that are targeted towards tourist population.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
OHI – 3: Utilize the media for the distribution and publication of hazard information.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
OHI – 4: Create a public speaking series on hazard related topics.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
OHI – 5: Ensure that the Red Cross citizen's disaster course is held on a frequent basis.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 6.1, 7.2, 8.3	Course offering.
OHI – 6: Update the WOCEMA website to provide hazard related information that is easily accessible.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
OHI – 7: Continue to work with the Ohio County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.	6.8	1.9, 5.5, 8.3	Existence of school evacuation and lock down plans.
OHI – 8: Continue to work with non-governmental organizations (youth, service, professional, religious) to promote mitigation education and awareness.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.

Project	Applies to Goal	Applies to Objective	Performance Measure
OHI – 9: Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
OHI – 10: Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).	1, 7	1.1, 1.2	Participation in the CRS user group.
OHI – 11: Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
OHI – 12: Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	1	1.3, 1.4, 1.5, 1.8	Course offering.
OHI – 13: Ensure that all shelters have adequate emergency power resources.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 6.1, 8.3	Emergency shelter readiness.
OHI – 14: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 6.1, 8.3	Coordination MOU's.

Project	Applies to Goal	Applies to Objective	Performance Measure
OHI – 15: Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 6.1, 8.3	EMS Plans.
OHI – 16: Teach Community Emergency Response Team (CERT) classes in Ohio County.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 6.1, 7.2, 8.3	Course offering.
OHI – 17: Increase the number of trained citizen emergency responders.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 8.3	Implementation of EMS Plan.
OHI – 18: Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 8.3	Implementation of EMS Plan.
OHI – 19: Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 8.3	Implementation of EMS Plan.
OHI – 20: Continue to conduct National Weather Service Storm Spotter classes.	1	1.9	Course offering.
OHI – 21: Work with the municipalities to update all floodplain ordinances adopted prior to 1987.	1	1.4	Updated ordinances.
OHI – 22: Provide additional training to county and municipal development officials on NFIP requirements.	1	1.4, 1.5	Participation in NFIP.

Project	Applies to Goal	Applies to Objective	Performance Measure
OHI – 23: Review the existing Wheeling-Ohio County EOP and update where necessary based on the recommendations of the Ohio County Hazard Mitigation Plan.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Periodic review of EOP plan.
OHI – 24: Ensure that the county and all municipalities adopt the revised EOP.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Adopted EOP.
OHI – 25: Expand the mission and membership of the Wheeling-Ohio County Local Emergency Planning Committee (LEPC) to act as a countywide disaster task force.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	MOU of Cooperation.
OHI – 26: Assist in the development of the Ohio Co. Enterprise Geographical Information System (GIS) and assist with the implementation of the E911 Center's Computer Aided Dispatch system (CAD).	1, 2, 3, 4, 5, 6, 7, 8	1.6, 2.1, 2.2, 3.2, 5.1, 5.2, 5.4	Current GIS and functioning CAD.
OHI – 27: Conduct outreach efforts to educate municipalities about the NFIP and its requirements.	1	1.4, 1.5	Participation in NFIP.
OHI – 28: Obtain update information on the number of NFIP policyholders in Ohio County and its municipalities.	1	1.4, 1.5	Database of NFIP policy holder.
OHI – 29: Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.	1	1.1, 1.2, 1.6	Database of repetitive loss properties.

Project	Applies to Goal	Applies to Objective	Performance Measure
OHI – 30: Develop a database of information on all repetitive loss properties including maps.	1	1.1, 1.2, 1.6	Database of repetitive loss properties.
OHI – 31: Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	1	1.1, 1.2, 1.6	A database of repetitive property owners.
OHI – 32: Establish a formal process for the city and the county to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	MOU's of coordination.
OHI – 33: Conduct a survey of all historic sites that are located in hazard areas.	1, 2, 3, 4, 5, 6, 7, 8	1.6, 2.1, 2.2	A survey of historic sites.
OHI – 34: Develop mitigation strategies to protect any at-risk historic properties.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Mitigation strategies in EOP and regional plans.
OHI – 35: Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.	1	1.4, 1.6	Updated Firms.
OHI – 36: Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	1	1.1, 1.6, 1.9	Coordination efforts.
OHI – 37: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.	5	5.1, 5.2, 5.5	A database of storage sites.

Project	Applies to Goal	Applies to Objective	Performance Measure
OHI – 38: Update the WOCEMA GIS system annually with current maps to be utilized in its Critical Infrastructure Program, Hazard Mitigation Program, LEPC, Evacuation and Transportation Routes, and Hazard Vulnerability Plans.	1, 3, 5, 6, 8	1.1, 1.2, 1.4, 1.6, 3.2, 5.2, 5.4, 6.1, 7.1, 7.3, 8.2	Progress towards obtaining aerial imagery.
OHI – 39: County will continue to seek out opportunities to apply for Hazard Mitigation Assistance (HMA) funds for mitigation reconstruction, elevations, relocations or acquisitions of identified at risk, repetitive loss, non-repetitive loss, substantial damaged, partially or completely demolished or destroyed properties within Ohio County. If mitigation reconstruction is chosen, properties identified as partially or completely demolished, outside of the regulatory floodway, as identified by available flood hazard data, will be reconstructed in accordance with the standards established in the local floodplain ordinance and in accordance with the same conditions as an elevated structure. Ohio County will comply with all acquisition, elevation, relocation and mitigation reconstruction requirements, as per the HMA Guidance.	1, 7	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.8, 7.1, 7.2, 7.3	Solicitation of HMA funds; identification/acquisition of properties; reconstruction as per flood plain ordinance.
BETHLEHEM			
BET – 1: Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.

Project	Applies to Goal	Applies to Objective	Performance Measure
BET – 2: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 6.1, 8.3	Coordination MOU's.
BET – 3: Teach Community Emergency Response Team (CERT) classes.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 6.1, 7.2, 8.3	Course offering.
BET – 4: Increase the number of trained citizen emergency responders.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 8.3	Implementation of EMS Plan.
BET – 5: Continue to participate in National Weather Service Storm Spotter classes.	1	1.9	Course offering.
BET – 6: Ensure that the Village adopt the revised EOP.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Adopted EOP.
BET – 7: Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	1	1.1, 1.2, 1.6	A database of repetitive property owners.
BET – 8: Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	1	1.1, 1.6, 1.9	Coordination efforts.
BET – 9: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials.	5	5.1, 5.2, 5.5	A database of storage sites.

Project	Applies to Goal	Applies to Objective	Performance Measure
CLEARVIEW			
CLE – 1: Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
CLE – 2: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 6.1, 8.3	Coordination MOU's.
CLE – 3: Teach Community Emergency Response Team (CERT) classes.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 6.1, 7.2, 8.3	Course offering.
CLE – 4: Increase the number of trained citizen emergency responders.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 8.3	Implementation of EMS Plan.
CLE – 5: Continue to participate in National Weather Service Storm Spotter classes.	1	1.9	Course offering.
CLE – 6: Ensure that the Village adopt the revised EOP.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Adopted EOP.
CLE – 7: Develop a database of information on all repetitive loss properties including maps.	1	1.1, 1.2, 1.6	Database of repetitive loss properties.

Project	Applies to Goal	Applies to Objective	Performance Measure
CLE – 8: Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	1	1.1, 1.6, 1.9	Coordination efforts.
CLE – 9: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials.	5	5.1, 5.2, 5.5	A database of storage sites.
TRIADELPHIA			
TRI – 1: Distribute letters to all property owners in the Town regarding potential flood hazards as required for participation in the Community Rating System (CRS).	1, 7	1.1, 1.2	Participation in the CRS user group.
TRI – 2: Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
TRI – 3: Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	1	1.3, 1.4, 1.5, 1.8	Course offering.
TRI – 4: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 6.1, 8.3	Coordination MOU's.

Project	Applies to Goal	Applies to Objective	Performance Measure
TRI – 5: Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 6.1, 8.3	EMS Plans.
TRI – 6: Teach Community Emergency Response Team (CERT) classes.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 6.1, 7.2, 8.3	Course offering.
TRI – 7: Increase the number of trained citizen emergency responders.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 8.3	Implementation of EMS Plan.
TRI – 8: Continue to participate in National Weather Service Storm Spotter classes.	1	1.9	Course offering.
TRI – 9: Work with the municipalities to update all floodplain ordinances adopted prior to 1987.	1	1.4	Updated ordinances.
TRI – 10: Provide additional training to municipal development officials on NFIP requirements.	1	1.4, 1.5	Participation in NFIP.
TRI – 11: Ensure that the Town adopt the revised EOP.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Adopted EOP.
TRI – 12: Conduct outreach efforts to educate town residents about the NFIP and its requirements.	1	1.4, 1.5	Participation in NFIP.
TRI – 13: Obtain updated information on the number of NFIP policyholders in the Town.	1	1.4, 1.5	Database of NFIP policy holder.

Project	Applies to Goal	Applies to Objective	Performance Measure
TRI – 14: Collect updated information of the number and location of all repetitive loss properties.	1	1.1, 1.2, 1.6	Database of repetitive loss properties.
TRI – 15: Develop a database of information on all repetitive loss properties including maps.	1	1.1, 1.2, 1.6	Database of repetitive loss properties.
TRI – 16: Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	1	1.1, 1.2, 1.6	A database of repetitive property owners.
TRI – 17: Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	1	1.1, 1.6, 1.9	Coordination efforts.
TRI – 18: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials.	5	5.1, 5.2, 5.5	A database of storage sites.
VALLEY GROVE			
VAL – 1: Ensure that the Village adopt the revised EOP.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Adopted EOP.
WEST LIBERTY			
WES – 1: Ensure that the Town adopt the revised EOP.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Adopted EOP.

Project	Applies to Goal	Applies to Objective	Performance Measure
WHEELING			
WHE – 1: Create displays for use at public events (health fair, public awareness day, county fair, city events).	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
WHE – 2: Create materials that are targeted towards tourist population.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
WHE – 3: Utilize the media for the distribution and publication of hazard information.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
WHE – 4: Create a public speaking series on hazard related topics.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
WHE – 5: Ensure that the Red Cross citizen's disaster course is held on a frequent basis.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 6.1, 7.2, 8.3	Course offering.
WHE – 6: Update the WOCEMA website to provide hazard related information that is easily accessible.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
WHE – 7: Continue to work with the Ohio County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.	6.8	1.9, 5.5, 8.3	Existence of school evacuation and lock down plans.
WHE – 8: Continue to work with non-governmental organizations (youth, service, professional, religious) to promote mitigation education and awareness.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.

Project	Applies to Goal	Applies to Objective	Performance Measure
WHE – 9: Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
WHE – 10: Distribute letters to all property owners in the City regarding potential flood hazards as required for participation in the Community Rating System (CRS).	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
WHE – 11: Establish all-hazard resource centers to be located in the main office of the City. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	1, 7	1.1, 1.2	Participation in the CRS user group.
WHE – 12: Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	1, 2, 3, 4, 5, 6, 7, 8	1.8, 3.1, 4.1, 5.5, 6.1, 8.1	Public awareness outreach.
WHE – 13: Ensure that all shelters have adequate emergency power resources.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 6.1, 8.3	Emergency shelter readiness.
WHE – 14: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 6.1, 8.3	Coordination MOU's.
WHE – 15: Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 6.1, 8.3	EMS Plans.

Project	Applies to Goal	Applies to Objective	Performance Measure
WHE – 16: Teach Community Emergency Response Team (CERT) classes.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 6.1, 7.2, 8.3	Course offering.
WHE – 17: Increase the number of trained citizen emergency responders.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 8.3	Implementation of EMS Plan.
WHE – 18: Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 8.3	Implementation of EMS Plan.
WHE – 19: Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.3, 5.5, 8.3	Implementation of EMS Plan.
WHE – 20: Continue to conduction National Weather Service Storm Spotter classes.	1	1.9	Course offering.
WHE – 21: Work with other municipalities to update all floodplain ordinances adopted prior to 1987.	1	1.4	Updated ordinances.
WHE – 22: Provide additional training to county and municipal development officials on NFIP requirements.	1	1.4, 1.5	Participation in NFIP.
WHE – 23: Review the existing Wheeling-Ohio County EOP and update where necessary based on the recommendations of the Regional Hazard Mitigation Plan.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Periodic review of EOP plan.

Project	Applies to Goal	Applies to Objective	Performance Measure
WHE – 24: Ensure that the City adopts the revised EOP.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Adopted EOP.
WHE – 25: Expand the mission and membership of the Wheeling-Ohio County Local Emergency Planning Committee (LEPC) to act as a countywide disaster task force.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	MOU of Cooperation.
WHE – 26: Assist in the development of the Ohio Co. Enterprise Geographical Information System (GIS) and assist with the implementation of the E911 Center's Computer Aided Dispatch system (CAD).	1, 2, 3, 4, 5, 6, 7, 8	1.6, 2.1, 2.2, 3.2, 5.1, 5.2, 5.4	Current GIS and functioning CAD.
WHE – 27: Conduct outreach efforts to educate municipalities about the NFIP and its requirements.	1	1.4, 1.5	Participation in NFIP.
WHE – 28: Obtain updated information on the number of NFIP policyholders in City.	1	1.4, 1.5	Database of NFIP policy holder.
WHE – 29: Collect updated information of the number and location of all repetitive loss properties throughout the City.	1	1.1, 1.2, 1.6	Database of repetitive loss properties.
WHE – 30: Develop a database of information on all repetitive loss properties including maps.	1	1.1, 1.2, 1.6	Database of repetitive loss properties.
WHE – 31: Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	1	1.1, 1.2, 1.6	A database of repetitive property owners.

Project	Applies to Goal	Applies to Objective	Performance Measure
WHE – 32: Establish a formal process for the city and the county to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	MOU's of coordination.
WHE – 33: Conduct a survey of all historic sites that are located in hazard areas.	1, 2, 3, 4, 5, 6, 7, 8	1.6, 2.1, 2.2	A survey of historic sites.
WHE – 34: Develop mitigation strategies to protect any at-risk historic properties.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Mitigation strategies in EOP and regional plans.
WHE – 35: Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.	1	1.4, 1.6	Updated Firms.
WHE – 36: Work with WV Department of Highway to identify areas of frequent roadway flooding and develop mitigation strategies.	1	1.1, 1.6, 1.9	Coordination efforts.
WHE – 37: Contact commercial and commuter rail lines to ensure that measures are being taken to address hazard risks.	5	5.1, 5.2, 5.5	Working relationship with RR operators.
WHE – 38: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in City and County.	5	5.1, 5.2, 5.5	A database of storage sites.

Project #	Applies to Goal	Applies to Objective	Performance Measure
WETZEL COUNTY			
WET – 1: Update the plan to monitor and clean storm water drainage systems within municipalities.	1	1.2	Updated plan.
WET – 2: Construct floodwalls in flood prone areas and where feasible.	1	1.1, 1.2	Potential sites for flood wall.
WET – 3: Create flood control dams in flood prone areas.	1, 7	1.1, 7.1, 7.2, 7.3	Potential sites for dam.
WET – 4: Coordinate with the WVDOH to conduct culvert inspections throughout the county.	1	1.1, 1.2	Outcome of coordinated effort.
WET – 5: Strategically place several rain gauges throughout Wetzel County. Periodically check gauges and report results to county representatives.	1	1.3, 1.4, 1.6, 1.8	A database of rainfall readings.
WET – 6: Instate a countywide permitting process which will require residents and/or developers. To file a permit with the county before beginning any new construction as a means of regulating floodplain development.	1	1.1, 1.2, 1.4, 1.5, 1.6	Progress towards a countywide permitting process.

Project #	Applies to Goal	Applies to Objective	Performance Measure
WET – 7: Instate countywide building codes, which will regulate the number of buildings and the materials used in buildings that are constructed in a floodplain.	1	1.1, 1.2, 1.3, 1.4	Progress towards countywide building code.
WET – 8: Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.	1	1.1, 1.2, 1.3	Federal funding application(s).
WET – 9: Continue to apply for funding for projects that will increase the county's CRS.	1, 7	1.1, 1.2	Participation in CRS user group.
WET – 10: Coordinate with local fire departments to designate alternative routes with signage.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	An evacuation plan with signage funding alternatives.
WET – 11: Coordinate with the West Virginia DOH to create more contracts for emergency snow removal.	1	1.9	Coordination with WVDOT.
WET – 12: Increase the amount of snow removal equipment on county routes to speed up snow removal process.	1	1.9	Acquisition of equipment.

Project #	Applies to Goal	Applies to Objective	Performance Measure
WET – 13: Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm.	1	1.8	Updated brochure.
WET – 14: Coordinate efforts with local media to provide earlier warning to residents of impending hailstorms.	1	1.8	Coordination with local media.
WET – 15: Coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending sever wind or tornado conditions.	1	1.8	Coordination efforts.
WET – 16: Enforce county-wide building codes that model the statewide 90 mph wind load rating.	1	1.4	Enforcement actions.
WET – 17: Instate countywide building codes which will regulate the number of buildings and the material used in buildings that are constructed.	1	1.1, 1.2, 1.4, 1.5	Progress towards countywide building code and prescriptive building materials.

Project #	Applies to Goal	Applies to Objective	Performance Measure
WET – 18: Reduce amount of landslide occurrences in Wetzel County by monitoring clear cutting operations.	1, 2	2.1	A year to year comparison of number of landslides/land subsidence.
WET – 19: Develop and informational brochure explaining the potential for earthquakes, as well as the potential damages from those earthquakes. The brochure should include information on measures to take to safe-proof homes and other structures from the potential effects of earthquakes.	3	3.1	Informational brochure.
WET – 20: Coordinate with local public service districts to expand system capabilities.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Adequate water supply for service during hazard event.
WET – 21: Develop an informational brochure to distribute to local farmers and residents.	1, 3, 4, 6, 8	1.3, 1.8, 3.1, 3.2, 4.1, 6.1, 8.1, 8.2	Public awareness.
WET – 22: Publicize locations where residents can obtain water during severe drought conditions.	1, 2, 3, 4, 5, 6, 7, 8	1.3, 1.8, 3.1, 3.2, 4.1, 6.1, 8.1, 8.2	Public awareness.

Project #	Applies to Goal	Applies to Objective	Performance Measure
WET – 23: Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires.	4	4.1	Information media.
WET – 24: Coordinate with the power company to clear trees and other debris from electric lines throughout the county.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Coordination as per EOP and regional plan.
WET – 25: Update terrorist annexes in county Emergency Operations Plans (EOPs).	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Updated plans.
WET – 26: Make the public aware of how to prepare for a bomb threat and who to contact if there is a threat.	6	6.1	Information discrimination material.
WET – 27: Perform commodity flow studies to further assess when, where, and what hazardous materials can pass through and into the county.	5	5.1, 5.2, 5.3, 5.4	A commodity flow study.
WET – 28: Increase public education and awareness regarding hazardous materials (HAZMAT) incidents.	5	5.5	Information discrimination material.

Project #	Applies to Goal	Applies to Objective	Performance Measure
WET – 29: County will continue to seek out opportunities to apply for Hazard Mitigation Assistance (HMA) funds for mitigation reconstruction, elevations, relocations or acquisitions of identified at risk, repetitive loss, non-repetitive loss, substantial damaged, partially or completely demolished or destroyed properties within Wetzel County. If mitigation reconstruction is chosen, properties identified as partially or completely demolished, outside of the regulatory floodway, as identified by available flood hazard data, will be reconstructed in accordance with the standards established in the local floodplain ordinance and in accordance with the same conditions as an elevated structure. Wetzel County will comply with all acquisition, elevation, relocation and mitigation reconstruction requirements, as per the HMA Guidance.	1.7	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.8, 7.1, 7.2, 7.3	Solicitation of HMA funds; identification/acquisition of properties; reconstruction as per flood plain ordinance.
HUNDRED			
HUN – 1: Coordinate with local fire departments to designate alternative routes with signage.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	An evacuation plan with signage funding alternatives.
HUN – 2: Reduce the amount of landslide occurrences in Wetzel County by monitoring clear cutting operations.	1, 2	2.1	A year to year comparison of number of landslides/land subsidence.

Project #	Applies to Goal	Applies to Objective	Performance Measure
NEW MARTINSVILLE			
NEW – 1: Update the plan to monitor and clean storm water drainage systems within municipalities.	1	1.2	Updated plan.
NEW – 2: Construct floodwalls in flood prone areas and where feasible.	1	1.1, 1.2	Potential sites for flood wall.
NEW – 3: Create flood control dams in flood prone areas.	1, 7	1.1, 7.1, 7.2, 7.3	Potential sites for dam.
NEW – 4: Continue to apply or Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.	1	1.1, 1.2, 1.3	Federal funding application(s).
NEW – 5: Coordinate with local fire departments to designate alternative routes with signage**.**	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	An evacuation plan with signage funding alternatives.
PADEN CITY			
PAD – 1: Construct floodwalls in flood prone areas and where feasible.	1	1.1, 1.2	Potential sites for flood wall.
PAD – 2: Create flood control dams in flood prone areas.	1, 7	1.1, 7.1, 7.2, 7.3	Potential sites for dam.

Project #	Applies to Goal	Applies to Objective	Performance Measure
PAD – 3: Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.	1	1.1, 1.2, 1.3	Federal funding application(s).
PAD – 4: Coordinate with local fire departments to designate alternative routes with signage.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	An evacuation plan with signage funding alternatives.
PINE GROVE			
PIN – 1: Coordinate with local fire departments to designate alternative routes with signage.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	An evacuation plan with signage funding alternatives.
PIN – 2: Coordinate with local public service districts to expand systems capabilities.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	Adequate water supply for service during hazard event.
SMITHFIELD			
SMI – 1: Coordinate with local fire departments to designate alternative routes with signage.	1, 2, 3, 4, 5, 6, 7, 8	1.9, 5.5, 8.3	An evacuation plan with signage funding alternatives.
SMI – 2: Update and distribute an information brochure describing the proper safety procedures to carry out during a severe thunderstorm.	1	1.8	Updated brochure.

CHAPTER 5.0 IMPLEMENTATION OF MITIGATION STRATEGIES AND ACTIONS

Each local jurisdiction was asked to review previously identified projects, priorities and status of each project within their jurisdiction. They were also asked to identify any new action/project needed in the foreseeable future. All identified mitigation projects and actions are presented in the previous chapter. Implementation of these projects/actions is the focus of this chapter. All projects and actions mitigate the effects of thirteen hazards previously identified. In order to optimize resource allocation for implementation, it was necessary to prioritize previously identified project/actions.

All local jurisdictions were asked to prioritize projects within their jurisdiction based on the criteria that roughly resembles the STAPLEE method. The following criterion was used:

Social Impacts: Consider whether the public would support implementation of the project. If so, priority likely rises.

Technical Feasibility: Consider whether the project can be done and if it will yield the intended outcomes. If yes, priority would likely rise.

Administrative Requirements: Consider the staffing, funding, and maintenance requirements of the project. If current capabilities can successfully manage and sustain the project, priority would be strengthened.

Political Impacts: Consider the acceptability of the project from the political frame. If it is likely to cause political upheaval, it would receive a lower priority.

Legal Ramifications: Consider whether the project can be lawfully implemented. If not, the project cannot be listed.

Environmental Impacts: Consider whether there would be negative consequences to environmental assets should the project be implemented. If assets are impact, priority would be likely to fall.

Economic Impacts/Cost Benefit: A brief "benefit cost review" per Federal Emergency Management Agency (FEMA) Publication 386-5: Using Benefit Cost Review in Mitigation Planning was conducted for each project to determine the "pros" and "cons" of each project as it related to project prioritization. Maximizing the use of available funds would positively affect a project's priority.

Local jurisdictions prioritized the projects based on the qualitative application of the above criterion. The Mayors, County Commissions, law enforcement and fire chiefs were involved in this process. EMA directors also participated in the prioritization process of the countywide projects.
The project priority list by jurisdiction is presented on the next page.

TABLE 5-1

PROJECT PRIORITY BY JURISDICTION

Project	Description	Priority
MARSHALL COUNTY		
MAR – 1	Attempt to instate a countywide permitting process through the planning commissions and assessor's office, which will require residents and/or developers to file a permit with the county before beginning any new construction in the floodplain.	7
MAR – 2	Review additional permitting processes used in other counties to determine if wording regarding the use of certain building materials is appropriate in the county floodplain ordinance.	7
MAR – 3	Continue to work with the Natural Resources Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	2
MAR – 4	Continue to undertake stream cleaning and stream bank restoration projects throughout the county as a means of lessening flood damage to personal property and roadways.	1
MAR – 5	Form a community watershed group to look at stream bank restoration in the Cameron area.	3
MAR – 6	Form a community watershed group to look at stream bank restoration in the Jims Run area of McMechen.	3
MAR – 7	Form a community watershed group to look at stream bank restoration in the Little Grave Creek Watershed.	3
MAR – 8	Coordinate county efforts to meet the requirements of becoming a participant in the CRS.	1
MAR – 9	Continue projects to upgrade the floodwall in the City of Benwood.	1
MAR – 10	Develop early warning and public notification capabilities through the use of such items as "Reverse 911" and AM radio stations.	2
MAR – 11	Continue to coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending severe thunderstorm conditions.	5
MAR – 12	Continue coordinating efforts with local media to post advance warnings of hailstorms.	8
MAR – 13	Ensure inclusion of wind hazards in public information campaigns.	8

Project	Description	Priority
MAR – 14	In coordination with monitoring floodplain development, continue to encourage the general public to use materials that can withstand moderate land subsidence during construction.	7
MAR – 15	Educate the public as to the earthquake risk in West Virginia. Dissemination of information can be via elementary school distribution.	8
MAR – 16	Distribute informational brochures developed by the NRCS to local farmers and residents.	8
MAR – 17	Educate local residents on the benefits of conserving water.	8
MAR – 18	Distribute information concerning the leading causes of wildfires, steps the general public can take to avoid starting wildfires, and instructions for controlled burns.	8
MAR – 19	Produce public awareness campaigns through local media.	8
MAR – 20	Continue pandemic flu planning efforts.	4
MAR – 21	Strengthen existing landline communication networks.	5
MAR – 22	Continue efforts to construct towers to facilitate better cellular and wireless communications.	5
MAR – 23	Once towers are constructed, negotiate with owners to use towers during emergency situations.	5
MAR – 24	Undertake a public education campaign regarding proper generator usage.	8
MAR – 25	Encourage local gas companies to undertake a public education campaign regarding resident and company rights surrounding gas-line rights-of-way.	5
MAR – 26	Work with sheltering agencies to ensure that those facilities identified as shelters have back-up power capabilities.	5
MAR – 27	Coordinate with AEP to ensure adequate coverage for emergency call-outs in the event of a downed electric line.	5

Project	Description	Priority
MAR – 28	Coordinate with law enforcement providers and appropriate event organizers to ensure that adequate security is available during large of high-profile events.	5
MAR – 29	Update the commodity flow study for Marshall County.	2
MAR – 30	Ensure measures and tips for evacuations are included in ongoing public education efforts.	8
MAR – 31	Facilitate the creation of safe zones as places where residents can go in the in the event of a hazardous materials incident. Further, publicize the location and access to these safe zones.	4
MAR – 32	Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	2
MAR – 33	Increase the knowledge of the general public concerning preparedness through the preparation of informational brochures, town meetings, training seminars, etc.	8
MAR – 34	Coordinate with local media to alert the public as to current threat status.	5
MAR – 35	Establish trauma centers to offer medical attention and counseling to affected populations in the event of a terrorist event.	4
MAR – 36	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	5
MAR – 37	Continue education and training efforts of first responders and emergency personnel.	8
MAR – 38	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	4
MAR – 39	Continue to encourage schools to update procedural and evacuation plans in the event of a bomb threat.	4
MAR – 40	Encourage high value assets to create and/or update procedural and evacuation plans in the event of a bomb threat.	2
MAR – 41	Evaluate dams and locks that play an integral role in water transportation and/or flood control.	4

Project	Description	Priority
MAR – 42	Encourage drilling companies to educate the general public about natural gas safety, community outreach efforts, etc.	5
MAR – 43	County will continue to seek out opportunities to apply for Hazard Mitigation Assistance (HMA) funds for mitigation reconstruction, elevations, relocations or acquisitions of identified at risk, repetitive loss, non-repetitive loss, substantial damaged, partially or completely demolished or destroyed properties within Marshall County. If mitigation reconstruction is chosen, properties identified as partially or completely demolished, outside of the regulatory floodway, as identified by available flood hazard data, will be reconstructed in accordance with the standards established in the local floodplain ordinance and in accordance with the same conditions as an elevated structure. Marshall County will comply with all acquisition, elevation, relocation and mitigation reconstruction requirements, as per the HMA Guidance.	6
BENWOOD		
BEN – 1	Continue projects to maintain upgrade the floodwall in the City of Benwood.	1
BEN – 2	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	3
BEN – 3	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorist or other incidents.	2
CAMERON		
CAM – 1	Continue to work with the Natural Resources Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	3
CAM – 2	Form a community watershed group to look at stream bank restoration in the Cameron area.	1
CAM – 3	Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	2
CAM – 4	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	5

Project	Description	Priority
CAM – 5	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	4
GLEN DALE		
GLE – 1	Continues to work with the Natural Resources Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	2
GLE – 2	Form a community watershed group to look at stream bank restoration in the Little Grave Creek Watershed.	1
GLE – 3	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	4
GLE – 4	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	3
MCMECHEN		
MCM - 1	Continue to work with the Natural Resources Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	3
MCM – 2	Form a community watershed group to look at stream bank restoration in the Jims Run area of McMechen.	1
MCM – 3	Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	2
MCM – 4	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	5
MCM – 5	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	4
MOUNDSVILLE		
MDS - 1	Coordinate with law enforcement providers and appropriate even organizers to ensure that adequate security is available during large or high-profile events.	3

Project	Description	Priority
MDS – 2	Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	1
MDS – 3	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	5
MDS – 4	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	2
MDS – 5	Law enforcement to work to develop a plan for oil, natural gas and chemical safety training.	4
OHIO COUNTY		
OHI – 1	Create displays for use at public events (health fair, public awareness day, county fair).	5
OHI – 2	Create materials that are targeted towards tourist population.	5
OHI – 3	Utilize the media for the distribution and publication of hazard information.	3
OHI – 4	Create a public speaking series on hazard related topics.	5
OHI – 5	Ensure that the Red Cross citizen's disaster course is held on a frequent basis.	3
OHI – 6	Update the WOCEMA website to provide hazard related information that is easily accessible.	3
OHI – 7	Continue to work with the Ohio County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.	3
OHI – 8	Continue to work with non-governmental organizations (youth, service, professional, religious) to promote mitigation education and awareness.	5
OHI – 9	Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	1

Project	Description	Priority
OHI – 10	Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).	6
OHI – 11	Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	1
OHI – 12	Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	4
OHI – 13	Ensure that all shelters have adequate emergency power resources.	2
OHI – 14	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	3
OHI – 15	Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).	3
OHI – 16	Teach Community Emergency Response Team (CERT) classes in Ohio County.	1
OHI – 17	Increase the number of trained citizen emergency responders.	2
OHI – 18	Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.	3
OHI – 19	Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.	2
OHI – 20	Continue to conduct National Weather Service Storm Spotter classes.	3
OHI – 21	Work with the municipalities to update all floodplain ordinances adopted prior to 1987.	5
OHI – 22	Provide additional training to county and municipal development officials on NFIP requirements.	1

Project	Description	Priority
OHI – 23	Review the existing Wheeling-Ohio County EOP and update where necessary based on the recommendations of the Ohio County Hazard Mitigation Plan.	1
OHI – 24	Ensure that the county and all municipalities adopt the revised EOP.	1
OHI – 25	Expand the mission and membership of the Wheeling-Ohio County Local Emergency Planning Committee (LEPC) to act as a countywide disaster task force.	1
OHI – 26	Assist in the development of the Ohio Co. Enterprise Geographical Information System (GIS) and assist with the implementation of the E911 Center's Computer Aided Dispatch system (CAD).	3
OHI – 27	Conduct outreach efforts to educate municipalities about the NFIP and its requirements.	3
OHI – 28	Obtain updated information on the number of NFIP policyholders in Ohio County and its municipalities.	3
OHI – 29	Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.	3
OHI – 30	Develop a database of information on all repetitive loss properties including maps.	3
OHI – 31	Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	3
OHI – 32	Establish a formal process for the city and the county to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.	4
OHI – 33	Conduct a survey of all historic sites that are located in hazard areas.	3
OHI – 34	Develop mitigation strategies to protect any at-risk historic properties.	5
OHI – 35	Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.	3
OHI – 36	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	5
OHI – 37	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.	3

Project	Description	Priority
OH – 38	Update the WOCEMA GIS system annually with current maps to be utilized in its Critical Infrastructure Program, Hazard Mitigation Program, LEPC, Evacuation and Transportation Routes, and Hazard Vulnerability Plans.	3
OHI – 39	County will continue to seek out opportunities to apply for Hazard Mitigation Assistance (HMA) funds for mitigation reconstruction, elevations, relocations or acquisitions of identified at risk, repetitive loss, non-repetitive loss, substantial damaged, partially or completely demolished or destroyed properties within Ohio County. If mitigation reconstruction is chosen, properties identified as partially or completely demolished, outside of the regulatory floodway, as identified by available flood hazard data, will be reconstructed in accordance with the standards established in the local floodplain ordinance and in accordance with the same conditions as an elevated structure. Ohio County will comply with all acquisition, elevation, relocation and mitigation reconstruction requirements, as per the HMA Guidance.	2
BETHLEHEM		
BET – 1	Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	1
BET – 2	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	3
BET – 3	Teach Community Emergency Response Team (CERT) classes.	1
BET – 4	Increase the number of trained citizen emergency responders.	2
BET – 5	Continue to participate in National Weather Service Storm Spotter classes.	1
BET – 6	Ensure that the county Village adopt the revised EOP.	1
BET – 7	Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	4
BET – 8	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	3

Project	Description	Priority
BET – 9	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials.	3
CLEARVIEW		
CLE – 1	Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	1
CLE – 2	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	3
CLE – 3	Teach Community Emergency Response Team (CERT) classes.	1
CLE – 4	Increase the number of trained citizen emergency responders.	2
CLE – 5	Continue to participate in National Weather Service Storm Spotter classes.	1
CLE – 6	Ensure that the Village adopt the revised EOP.	1
CLE – 7	Develop a database of information on all repetitive loss properties including maps.	3
CLE – 8	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	3
CLE – 9	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials.	3
TRIADELPHIA		
TRI – 1	Distribute letters to all property owners in the Town regarding potential flood hazards as required for participation in the Community Rating System (CRS).	6
TRI – 2	Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	1
TRI – 3	Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	5

Project	Description	Priority
TRI – 4	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	3
TRI – 5	Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).	3
TRI – 6	Teach Community Emergency Response Team (CERT) classes.	1
TRI – 7	Increase the number of trained citizen emergency responders.	2
TRI – 8	Continue to participate in National Weather Service Storm Spotter classes.	1
TRI – 9	Work with the county and neighboring municipalities to update all floodplain ordinances adopted prior to 1987.	3
TRI – 10	Provide additional training to county and municipal development officials on NFIP requirements.	5
TRI – 11	Ensure that the Town adopt the revised EOP.	1
TRI – 12	Conduct outreach efforts to educate town residents about the NFIP and its requirements.	3
TRI – 13	Obtain updated information on the number of NFIP policyholders in the town.	3
TRI – 14	Collect updated information of the number and location of all repetitive loss properties.	3
TRI – 15	Develop a database of information on all repetitive loss properties including maps.	3
TRI – 16	Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	4
TRI – 17	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	3
TRI – 18	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials.	3
VALLEY GROVE		

Project	Description	Priority
VAL – 1	Ensure that the Village adopt the revised EOP.	1
WEST LIBERTY		
WES – 1	Ensure that the Town adopt the revised EOP.	1
WHEELING		
WHE – 1	Create displays for use at public events (health fair, public awareness day, county fair, city events).	5
WHE – 2	Create materials that are targeted towards tourist population.	5
WHE – 3	Utilize the media for the distribution and publication of hazard information.	3
WHE – 4	Create a public speaking series on hazard related topics.	5
WHE – 5	Ensure that the Red Cross citizen's disaster course is held on a frequent basis.	3
WHE – 6	Update the WOCEMA website to provide hazard related information that is easily accessible.	3
WHE – 7	Continue to work with the Ohio County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.	3
WHE – 8	Continue to work with non-governmental organizations (youth, service, professional, religious) to promote mitigation education and awareness.	5
WHE – 9	Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	1

Project	Description	Priority
WHE – 10	Distribute letters to all property owners in the City regarding potential flood hazards as required for participation in the Community Rating System (CRS).	6
WHE – 11	Establish all-hazard resource centers to be located in the main office of the City. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	1
WHE – 12	Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	4
WHE – 13	Ensure that all shelters have adequate emergency power resources.	2
WHE – 14	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	3
WHE – 15	Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).	3
WHE – 16	Teach Community Emergency Response Team (CERT) classes.	1
WHE – 17	Increase the number of trained citizen emergency responders.	2
WHE – 18	Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.	3
WHE – 19	Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.	2
WHE – 20	Continue to participate in National Weather Service Storm Spotter classes.	3
WHE – 21	Work with other municipalities to update all floodplain ordinances adopted prior to 1987.	5

Project	Description	Priority
WHE – 22	Provide additional training to county and municipal development officials on NFIP requirements.	1
WHE – 23	Review the existing Wheeling-Ohio County EOP and update where necessary based on the recommendations of the Regional Hazard Mitigation Plan.	1
WHE – 24	Ensure that the City adopts the revised EOP.	1
WHE – 25	Expand the mission and membership of the Wheeling-Ohio County Local Emergency Planning Committee (LEPC) to act as a countywide disaster task force.	1
WHE – 26	Assist in the development of the Ohio Co. Enterprise Geographical Information System (GIS) and assist with the implementation of the E911 Center's Computer Aided Dispatch system (CAD).	3
WHE – 27	Conduct outreach efforts to educate municipalities about the NFIP and its requirements.	3
WHE – 28	Obtain updated information on the number of NFIP policyholders in the City.	3
WHE – 29	Collect updated information of the number and location of all repetitive loss properties throughout the City.	3
WHE – 30	Develop a database of information on all repetitive loss properties including maps.	3
WHE – 31	Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	3
WHE – 32	Establish a formal process for the city and the county to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.	4
WHE – 33	Conduct a survey of all historic sites that are located in hazard areas.	3
WHE – 34	Develop mitigation strategies to protect any at-risk historic properties.	5

Project	Description	Priority
WHE – 35	Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.	3
WHE – 36	Work with WV Department of Highway to identify areas of frequent roadway flooding and develop mitigation strategies.	5
WHE – 37	Contact commercial and commuter rail lines to ensure that measures are being taken to address hazard risks.	3
WHE – 38	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in the City and County.	3
WETZEL COUNTY		
WET – 1	Update the plan to monitor and clean storm water drainage systems within municipalities.	2
WET – 2	Construct floodwalls in flood prone areas and where feasible.	1
WET – 3	Create flood control dams in flood prone areas.	1
WET – 4	Coordinate with the WVDOH to conduct culvert inspections throughout the county.	1
WET – 5	Strategically place several rain gauges throughout Wetzel County. Periodically check gauges and report results to county representatives.	2
WET – 6	Instate a countywide permitting process which will require residents and/or developers. To file a permit with the county before beginning any new construction as a means of regulating floodplain development.	3
WET – 7	Instate countywide building codes, which will regulate the number of buildings and the materials used in buildings that are constructed in a floodplain.	3
WET – 8	Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.	1
WET – 9	Continue to apply for funding for projects that will increase the county's CRS.	1
WET – 10	Coordinate with local fire departments to designate alternative routes with signage.	3

Project	Description	Priority
WET – 11	Coordinate with the West Virginia DOH to create more contracts for emergency snow removal.	3
WET – 12	Increase the amount of snow removal equipment on county routes to speed up snow removal process.	4
WET – 13	Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm.	5
WET – 14	Coordinate efforts with local media to provide earlier warning to residents of impending hailstorms.	5
WET – 15	Coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending sever wind or tornado conditions.	5
WET – 16	Enforce county-wide building codes that model the statewide 90 mph wind load rating.	5
WET – 17	Instate countywide building codes which will regulate the number of buildings and the material used in buildings that are constructed.	5
WET – 18	Reduce the amount of landslide occurrences in Wetzel County by monitoring clear cutting operations.	4
WET – 19	Develop an informational brochure explaining the potential for earthquakes, as well as the potential damages from those earthquakes. The brochure should include information on measures to take to safe-proof homes and other structures from the potential effects of earthquakes.	5
WET – 20	Coordinate with local public service districts to expand system capabilities.	3
WET – 21	Develop an informational brochure to distribute to local farmers and residents.	3
WET – 22	Publicize locations where residents can obtain water during severe drought conditions.	3
WET – 23	Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires.	3

Project	Description	Priority
WET – 24	Coordinate with the power company to clear trees and other debris from electric lines throughout the county.	4
WET – 25	Update terrorist annexes in county Emergency Operations Plans (EOPs).	2
WET – 26	Make the public aware of how to prepare for a bomb threat and who to contact if there is a threat.	4
WET – 27	Perform commodity flow studies to further assess when, where, and what hazardous materials can pass through and into the county.	2
WET – 28	Increase public education and awareness regarding hazardous materials (HAZMAT) incidents.	3
WET – 29	County will continue to seek out opportunities to apply for Hazard Mitigation Assistance (HMA) funds for mitigation reconstruction, elevations, relocations or acquisitions of identified at risk, repetitive loss, non-repetitive loss, substantial damaged, partially or completely demolished or destroyed properties within Wetzel County. If mitigation reconstruction is chosen, properties identified as partially or completely demolished, outside of the regulatory floodway, as identified by available flood hazard data, will be reconstructed in accordance with the standards established in the local floodplain ordinance and in accordance with the same conditions as an elevated structure. Wetzel County will comply with all acquisition, elevation, relocation and mitigation reconstruction requirements, as per the HMA Guidance.	1
HUNDRED		
HUN – 1	Coordinate with local fire departments to designate alternative routes with signage.	1
HUN – 2	Reduce the amount of landslide occurrences in the Town by monitoring clear cutting operations.	2
NEW MARTINSVILLE		
NEW – 1	Update the plan to monitor and clean storm water drainage systems in the City.	2
NEW – 2	Construct floodwalls in flood prone areas and where feasible.	4
NEW – 3	Create flood control dams in flood prone areas.	5
NEW – 4	Continue to apply or Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.	1

Project	Description	Priority
NEW – 5	Coordinate with local fire departments to designate alternative routes with signage**.**	3
PADEN CITY		
PAD – 1	Construct floodwalls in flood prone areas and where feasible.	3
PAD – 2	Create flood control dams in flood prone areas.	4
PAD – 3	Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.	1
PAD – 4	Coordinate with local fire departments to designate alternative routes with signage.	2
PINE GROVE		
PIN – 1	Coordinate with local fire departments to designate alternative routes with signage.	1
PIN – 2	Coordinate with local public service districts to expand systems capabilities.	2
SMITHFIELD		
SMI – 1	Coordinate with local fire departments to designate alternative routes with signage.	1
SMI – 2	Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm.	2

PROJECT STATUS AND IMPLEMENTATION

For each prioritized project, its status and anticipated timeframe for completion is included after consultation with the involved agencies. Although in many instances project delivery may depend on the joint efforts of more than one agency, a lead coordinating agency is identified for each project. Each project may also be eligible for multiple funding sources. Table 5-2 showing project specific implementation is included here. Several projects have been completed and are carried over to this plan as ongoing reviews and updates are also needed.

Repetitive losses due to flood events have been of concern. To address this all counties in the region have adopted flood plain ordinances. This ordinance applies to all jurisdictions within the counties

unless they adopt a separate flood plain ordinance. A few local jurisdictions have adopted their own ordinance. The following jurisdictions have a flood plain ordinance:

Ohio County

City of Wheeling

Village of Triadelphia

Marshall County

City of Benwood

City of Cameron

City of Glen Dale

City of McMechen

City of Moundsville

Wetzel County

City of New Martinsville

Paden City

Town of Hundred

Town of Pine Grove

Town of Smithfield

Due to the hilly terrain and higher elevations, some jurisdictions have neither experienced nor are expected to experience a flood event in the future. These jurisdictions have not adopted their own ordinance.

A few jurisdictions have building inspectors to enforce the ordinance. A building permit is needed for the construction in flood plain. A new project is added in this plan to monitor violations and strengthen the code enforcement. An aerial photography project is included for this purpose in Ohio County. Other counties may elect to do the same in future.

Each county EMA engages in community outreach activities and has developed print, visual and audio material. EMAs continue to update this material and make it available to the residents. Events are held in local jurisdictions; local talk shows are utilized; students in schools are engaged and provided literature to take home. In addition, the EMA offices are accessible to the residents for answering their questions or addressing their concerns.

TABLE 5-2

MITIGATION PROJECTS/ACTIONS

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
MARSHALL COUNTY						
MAR – 1	Attempt to instate a countywide permitting process through the planning commissions and assessor's office, which will require residents and/or developers to file a permit with the county before beginning any new construction in the floodplain.	Carry Over	5 yrs.	Local	Floodplain Coordinator; Assessor; Planning Commission	Prevention
MAR – 2	Review additional permitting processes used in other counties to determine if wording regarding the use of certain building materials is appropriate in the county floodplain ordinance.	Carry Over	Ongoing	Local	Planning Commission	Prevention
MAR – 3	Continue to work with the Natural Resources Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	Carry Over	Ongoing	NRCS/Local	NRCS	Natural Resource Protection
MAR – 4	Continue to undertake stream cleaning and stream bank restoration projects throughout the county as a means of lessening flood damage to personal property and roadways.	Carry Over	Ongoing	NRCS/Local	NRCS	Prevention

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
MAR – 5	Form a community watershed group to look at stream bank restoration in the Cameron area.	Carry Over	5 yrs.	N/A	NRCS/Cameron	Natural Resource Protection
MAR – 6	Form a community watershed group to look at stream bank restoration in the Jims Run area of McMechen.	Carry Over	5 yrs.	N/A	NRCS/McMechen	Natural Resource Protection
MAR – 7	Form a community watershed group to look at stream bank restoration in the Little Grave Creek Watershed.	Carry Over	5 yrs.	N/A	NRCS/Glen Dale	Natural Resource Protection
MAR – 8	Coordinate county efforts to meet the requirements of becoming a participant in the CRS.	Carry Over	Ongoing	N/A	County Commission	Public Awareness
MAR – 9	Continue projects to upgrade the floodwall in the City of Benwood.	Carry Over	5 yrs.	USACE; WVDEP	USACE; WVDEP City of Benwood	Structural Projects
MAR – 10	Develop early warning and public notification capabilities through the use of such items as “Reverse 911” and AM radio stations.	Complete	Review and Upgrade Ongoing	Local/ WVDHS	County EMA	Public Awareness
MAR – 11	Continue to coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending severe thunderstorm conditions.	Carry Over	Ongoing	N/A	911; EMA; NOAA	Public Awareness

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
MAR – 12	Continue coordinating efforts with local media to post advance warnings of hailstorms.	Carry Over	Ongoing	N/A	911; EMA; NOAA	Public Awareness
MAR – 13	Ensure inclusion of wind hazards in public information campaigns.	Carry Over	Ongoing	Local	EMA	Public Awareness
MAR – 14	In coordination with monitoring floodplain development, continue to encourage the general public to use materials that can withstand moderate land subsidence during construction.	Carry Over	Ongoing	N/A	Planning commission	Prevention
MAR – 15	Educate the public as to the earthquake risk in West Virginia. Dissemination of information can be via elementary school distribution.	Carry Over	Ongoing	Local	EMA; Schools	Public Awareness
MAR – 16	Distribute informational brochures developed by the NRCS to local farmers and residents.	Carry Over	Ongoing	WVU	WVU Extension Farm Bureau	Public Awareness
MAR – 17	Educate local residents on the benefits of conserving water.	Carry Over	Ongoing	Local	PSD's; Health Dept.	Public Awareness
MAR – 18	Distribute information concerning the leading causes of wildfires, steps the general public can take to avoid starting wildfires, and instructions for controlled burns.	Carry Over	Ongoing	WVDF	Division of Forestry	Public Awareness

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
MAR – 19	Produce public awareness campaigns through local media.	Carry Over	Ongoing	Local; PDM; DHHR	Health Dept., Reynolds Memorial Hospital; EMA	Public Awareness
MAR – 20	Continue pandemic flu planning efforts.	Carry Over	Ongoing	Local DHHR	Health Dept.	Emergency Services
MAR – 21	Strengthen existing landline communication networks.	Carry Over	5 yrs.	Telcos	Telcos	Prevention
MAR – 22	Continue efforts to construct towers to facilitate better cellular and wireless communications.	Complete	Mainte-nance Ongoing	Telcos	Telcos, 911, EMA	Structural Projects
MAR – 23	Once towers are constructed, negotiate with owners to use towers during emergency situations.	Complete	Ongoing Access	N/A	911, EMA	Emergency Services
MAR – 24	Undertake a public education campaign regarding proper generator usage.	Carry Over	Ongoing	Local; PDM	EMA; AEP	Public Awareness
MAR – 25	Encourage local gas companies to undertake a public education campaign regarding resident and company rights surrounding gas-line rights-of-way.	Carry Over	Ongoing	N/A	Mountaineer Gas	Public Awareness

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
MAR – 26	Work with sheltering agencies to ensure that those facilities identified as shelters have back-up power capabilities.	Carry Over	Ongoing	N/A	EMA; Red Cross	Emergency Services
MAR – 27	Coordinate with AEP to ensure adequate coverage for emergency call-outs in the event of a downed electric line.	Carry Over	Ongoing	N/A	EMA; AEP	Emergency Services
MAR – 28	Coordinate with law enforcement providers and appropriate event organizers to ensure that adequate security is available during large of high-profile events.	Carry Over	Ongoing	N/A	Law Enforcement; Event Organizer	Emergency Services
MAR – 29	Update the commodity flow study for Marshall County.	Complete	Ongoing Cyclic	Local, HMEP	Planning Commission; Law Enforcement	Emergency Services
MAR – 30	Ensure measures and tips for evacuations are included in ongoing public education efforts.	Carry Over	Ongoing	Local; PDM; SERC	EMA, Planning Commission, Law Enforcement	Public Awareness
MAR – 31	Facilitate the creation of safe zones as places where residents can go in the in the event of a hazardous materials incident. Further, publicize the location and access to these safe zones.	Carry Over	Ongoing	N/A	Planning Commission; Law Enforcement; LEPC	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
MAR – 32	Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	Complete	Ongoing Plan Updates	Local; EMPG; SHSP	EMA; LEPC; Law Enforcement; Fire Department; Health Department; 911	Emergency Services
MAR – 33	Increase the knowledge of the general public concerning preparedness through the preparation of informational brochures, town meetings, training seminars, etc.	Carry Over	Ongoing	Local; EMPG; SHSP	EMA; Health Department; Law Enforcement; Fire Department	Emergency Services
MAR – 34	Coordinate with local media to alert the public as to current threat status.	Carry Over	Ongoing	N/A	EMA; LEPC; Law Enforcement; Fire Department; Health Department; 911	Emergency Services
MAR – 35	Establish trauma centers to offer medical attention and counseling to affected populations in the event of a terrorist event.	Carry Over	Ongoing	N/A	EMA; Red Cross; Reynolds Memorial Hospital	Emergency Services
MAR – 36	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	Carry Over	Ongoing	N/A	EMA; Law Enforcement; Fire Department; Health Department; 911; LEPC	Emergency Services
MAR – 37	Continue education and training efforts of first responders and emergency personnel.	Carry Over	Ongoing	Local; EMPG; SHSP; DHHR	EMA; Health Department; Other	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
MAR – 38	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	Carry Over	Ongoing	N/A	Health Department	Emergency Services
MAR – 39	Continue to encourage schools to update procedural and evacuation plans in the event of a bomb threat.	Carry Over	Ongoing	N/A	County Schools; EMA	Emergency Services
MAR – 40	Encourage high value assets to create and/or update procedural and evacuation plans in the event of a bomb threat.	Carry Over	Ongoing	N/A	EMA	Emergency Services
MAR – 41	Evaluate dams and locks that play an integral role in water transportation and/or flood control.	Carry Over	Ongoing	N/A	USACE; NRCS	Prevention
MAR – 42	Encourage drilling companies to educate the general public about natural gas safety, community outreach efforts, etc.	Carry Over	Ongoing	N/A	EMA; Drilling Companies; LEPC	Public Awareness

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
MAR – 43	County will continue to seek out opportunities to apply for Hazard Mitigation Assistance (HMA) funds for mitigation reconstruction, elevations, relocations or acquisitions of identified at risk, repetitive loss, non-repetitive loss, substantial damaged, partially or completely demolished or destroyed properties within Marshall County. If mitigation reconstruction is chosen, properties identified as partially or completely demolished, outside of the regulatory floodway, as identified by available flood hazard data, will be reconstructed in accordance with the standards established in the local floodplain ordinance and in accordance with the same conditions as an elevated structure. Marshall County will comply with all acquisition, elevation, relocation and mitigation reconstruction requirements, as per the HMA Guidance.	NEW	Ongoing	HMA	County Commission	Structural Projects

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
BENWOOD						
BEN – 1	Continue projects to maintain upgrade the floodwall in the City of Benwood.	Carry Over	5 yrs.	USACE; WVDEP	USACE; WVDEP City of Benwood	Structural Projects
BEN – 2	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	Carry Over	Ongoing	N/A	EMA; Law Enforcement; Fire Department; Health Department; 911; LEPC, City of Benwood	Emergency Services
BEN – 3	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorist or other incidents.	Carry Over	Ongoing	N/A	Health Department City of Benwood	Emergency Services
CAMERON						
CAM – 1	Continue to work with the Natural Resources Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	Carry Over	Ongoing	NRCS/Local	NRCS City of Cameron	Natural Resource Protection
CAM – 2	Form a community watershed group to look at stream bank restoration in the Cameron area.	Carry Over	5 yrs.	N/A	NRCS City of Cameron	Natural Resource Protection

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
CAM – 3	Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	Complete	Ongoing Plan Updates	Local; EMPG; SHSP	EMA; LEPC; Law Enforcement; Fire Department; Health Department; 911 City of Cameron	Emergency Services
CAM – 4	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	Carry Over	Ongoing	N/A	EMA; Law Enforcement; Fire Department; Health Department; 911; LEPC City of Cameron	Emergency Services
CAM – 5	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	Carry Over	Ongoing	N/A	Health Department City of Cameron	Emergency Services
GLEN DALE						
GLE – 1	Continues to work with the Natural Resources Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	Carry Over	Ongoing	NRCS/Local	NRCS City of Glen Dale	Natural Resource Protection
GLE – 2	Form a community watershed group to look at stream bank restoration in the Little Grave Creek Watershed.	Carry Over	5 yrs.	N/A	NRCS City of Glen Dale	Natural Resource Protection

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
GLE – 3	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	Carry Over	Ongoing	Local; EMPG; SHSP; DHHR	EMA Health Department City of Glen Dale	Emergency Services
GLE – 4	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	Carry Over	Ongoing	N/A	Health Department City of Glen Dale	Emergency Services
MCMECHEN						
MCM - 1	Continue to work with the Natural Resources Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	Carry Over	Ongoing	NRCS/Local	NRCS City of McMechen	Natural Resource Protection
MCM – 2	Form a community watershed group to look at stream bank restoration in the Jims Run area of McMechen.	Carry Over	5 yrs.	N/A	NRCS City of McMechen	Natural Resource Protection
MCM – 3	Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	Complete	Ongoing Plan Updates	Local; EMPG; SHSP	EMA; LEPC; Law Enforcement; Fire Department; Health Department; 911; City of McMechen	Emergency Services
MCM – 4	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	Carry Over	Ongoing	N/A	EMA; Health Department; City of McMechen	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
MCM – 5	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	Carry Over	Ongoing	N/A	Health Department City of McMechen	Emergency Services
MOUNDSVILLE						
MDS - 1	Coordinate with law enforcement providers and appropriate even organizers to ensure that adequate security is available during large or high-profile events.	Carry Over	Ongoing	N/A	Law Enforcement Event Organizer City of Moundsville	Emergency Services
MDS – 2	Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	Carry Over	Ongoing	Local; EMPG; SHSP	EMA; LEPC; Law Enforcement; Fire Department; Health Department; 911; City of Moundsville	Emergency Services
MDS – 3	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	Carry Over	Ongoing	Local; EMPG; SHSP; DHHR	EMA Health Department City of Moundsville	Emergency Services
MDS – 4	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	Carry Over	Ongoing	N/A	Health Department City of Moundsville	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
MDS – 5	Law enforcement to work to develop a plan for oil, natural gas and chemical safety training.	NEW	3 yrs.	Local/Gas Companies	OEPC City of Moundsville	Emergency Services
OHIO COUNTY						
OHI – 1	Create displays for use at public events (health fair, public awareness day, county fair).	Complete	Ongoing	WVU/Local	WOCEMA WVU Extension Service	Public Education and Awareness
OHI – 2	Create materials that are targeted towards tourist population.	Complete	Ongoing	Wheeling Area Chamber of Commerce	Wheeling Area Chamber of Commerce	Public Education and Awareness
OHI – 3	Utilize the media for the distribution and publication of hazard information.	Complete	Ongoing	N/A	Ohio County Commission City of Wheeling	Public Education and Awareness
OHI – 4	Create a public speaking series on hazard related topics.	Complete	Main-tenance Ongoing	N/A	WOCEMA	Public Education and Awareness
OHI – 5	Ensure that the Red Cross citizen's disaster course is held on a frequent basis.	Carry Over	Ongoing	N/A	American Red Cross	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
OHI – 6	Update the WOCEMA website to provide hazard related information that is easily accessible.	Complete	Main-tenance Ongoing	N/A	WOCEMA	Emergency Services
OHI – 7	Continue to work with the Ohio County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.	Complete	Review/ Improve Ongoing	N/A	WOCEMA Wheeling Fire Dept. Ohio County Schools	Public Education and Awareness
OHI – 8	Continue to work with non-governmental organizations (youth, service, professional, religious) to promote mitigation education and awareness.	Complete	Review/ Improve Ongoing	N/A	WOCEMA	Public Education and Awareness
OHI – 9	Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	Complete	Main-tenance Ongoing	WOCEMA	WOCEMA	Public Education and Awareness
OHI – 10	Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).	Carry Over	Ongoing	Local	Ohio County	Public Education and Awareness

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
OHI – 11	Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	Complete	Updates Ongoing	WOCEMA	Ohio County City of Wheeling Triadelphia	Public Education and Awareness
OHI – 12	Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	Carry Over	Ongoing	WVDHSEM	WVDHSEM	Emergency Services
OHI – 13	Ensure that all shelters have adequate emergency power resources.	Complete	Monitor-ing Ongoing	N/A	American Red Cross	Emergency Services
OHI – 14	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	Complete	Info Sharing Ongoing	N/A	Ohio County and all Municipalities	Emergency Services
OHI – 15	Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).	Carry Over	Ongoing	N/A	County Animal Control WV Extension Service Society for the Prevention of Cruelty to Animals	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
OHI – 16	Teach Community Emergency Response Team (CERT) classes in Ohio County.	Ongoing	Ongoing	Citizen Corps	WOCEMA	Emergency Services
OHI – 17	Increase the number of trained citizen emergency responders.	Ongoing	Ongoing	Citizen Corps	American Red Cross	Emergency Services
OHI – 18	Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.	Complete	Exercises Ongoing	HMEP/ EMPG	WOCEMA	Emergency Services
OHI – 19	Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.	Complete	Ongoing Training Oppor-tunities	RESA	RESA	Emergency Services
OHI – 20	Continue to conduct National Weather Service Storm Spotter classes.	Complete	Ongoing Classes	National Weather Service	National Weather Service	Emergency Services
OHI – 21	Work to update all floodplain ordinances.	Carry Over	5 yrs.	N/A	Municipalities WOCEMA WVDHSEM	Prevention
OHI – 22	Provide additional training to county and municipal development officials on NFIP requirements.	Carry Over	Ongoing	WVDHSEM	WVDHSEM	Prevention

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
OHI – 23	Review the existing Wheeling-Ohio County EOP and update where necessary based on the recommendations of the Ohio County Hazard Mitigation Plan.	Complete	Review/ Update Ongoing	WOCEMA	WOCEMA	Emergency Services
OHI – 24	Ensure that the county and all municipalities adopt the revised EOP.	Complete	Ongoing Adoption of Updates	N/A	WOCEMA	Emergency Services
OHI – 25	Expand the mission and membership of the Wheeling-Ohio County Local Emergency Planning Committee (LEPC) to act as a countywide disaster task force.	Complete	Ongoing Expan-sion	N/A	WOCEMA	Emergency Services
OHI – 26	Assist in the development of the Ohio Co. Enterprise Geographical Information System (GIS) and assist with the implementation of the E911 Center's Computer Aided Dispatch system (CAD).	Carry Over	Ongoing	Assessor's Office, Police Dept., 911 County Commission	WOCEMA	Emergency Services
OHI – 27	Conduct outreach efforts to educate municipalities about the NFIP and its requirements.	Carry Over	Ongoing	WVDHSEM FEMA	WOCEMA	Prevention

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
OHI – 28	Obtain updated information on the number of NFIP policyholders in Ohio County and its municipalities.	Carry Over	Ongoing	N/A	WOCEMA WVDHSEM	Prevention
OHI – 29	Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.	Carry Over	Ongoing	N/A	WOCEMA WVDHSEM	Prevention
OHI – 30	Develop a database of information on all repetitive loss properties including maps.	Carry Over	Ongoing	Assessor's Office, 911	WOCEMA WVDHSEM	Prevention
OHI – 31	Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	Carry Over	Ongoing	Assessor's Office, 911	WVDHSEM	Structural Projects
OHI – 32	Establish a formal process for the city and the county to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.	Complete	Ongoing Process Review	N/A	WOCEMA	Emergency Services
OHI – 33	Conduct a survey of all historic sites that are located in hazard areas.	Carry Over	5 yrs.	National Historical Events	Wheeling Historical Society	Prevention

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
OHI – 34	Develop mitigation strategies to protect any at-risk historic properties.	Carry Over	Ongoing	National Historical Events	Wheeling Historical Society, WOCEMA	Prevention
OHI – 35	Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.	Complete	N/A	FEMA	WOCEMA	Prevention
OHI – 36	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	Carry Over	Ongoing	WVDOT	WOCEMA WVDOH	Structural Projects
OHI – 37	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.	Carry Over	Ongoing	HMEP	Wheeling-Ohio County LEPC	Emergency Services
OHI - 38	Update the WOCEMA GIS system annually with current maps to be utilized in its Critical Infrastructure Program, Hazard Mitigation Program, LEPC, Evacuation and Transportation Routes, and Hazard Vulnerability Plans.	New	Ongoing	WOCEMA	WOCEMA County Commission	Prevention/Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
OHI – 39	County will continue to seek out opportunities to apply for Hazard Mitigation Assistance (HMA) funds for mitigation reconstruction, elevations, relocations or acquisitions of identified at risk, repetitive loss, non-repetitive loss, substantial damaged, partially or completely demolished or destroyed properties within Ohio County. If mitigation reconstruction is chosen, properties identified as partially or completely demolished, outside of the regulatory floodway, as identified by available flood hazard data, will be reconstructed in accordance with the standards established in the local floodplain ordinance and in accordance with the same conditions as an elevated structure. Ohio County will comply with all acquisition, elevation, relocation and mitigation reconstruction requirements, as per the HMA Guidance.	NEW	Ongoing	HMA	Ohio County City of Wheeling	Structural Projects

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
BETHLEHEM						
BET – 1	Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	Complete	Main-tenance Ongoing	WOCEMA	Village of Bethlehem	Public Education and Awareness
BET – 2	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	Complete	Info Sharing Ongoing	N/A	Ohio County Commission Village of Bethlehem	Emergency Services
BET – 3	Teach Community Emergency Response Team (CERT) classes.	Ongoing	Ongoing	Citizen Corps	WOCEMA Village of Bethlehem	Emergency Services
BET – 4	Increase the number of trained citizen emergency responders.	Ongoing	Ongoing	Citizen Corps	American Red Cross Village of Bethlehem	Emergency Services
BET – 5	Continue to participate in National Weather Service Storm Spotter classes.	Complete	Ongoing Classes	National Weather Service	National Weather Service Village of Bethlehem	Emergency Services
BET – 6	Ensure that the Village adopt the revised EOP.	Complete	Ongoing Adoption of Updates	N/A	WOCEMA Village of Bethlehem	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
BET – 7	Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	Carry Over	Ongoing	Assessor's Office, 911	WVDHSEM Village of Bethlehem	Structural Projects
BET – 8	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	Carry Over	Ongoing	WVDOT	WOCEMA WVDOH Village of Bethlehem	Structural Projects
BET – 9	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials.	Carry Over	Ongoing	HMEP	Wheeling-Ohio County LEPC Village of Bethlehem	Emergency Services
CLEARVIEW						
CLE – 1	Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	Complete	Main-tenance Ongoing	WOCEMA	WOCEMA Village of Clearview	Public Education and Awareness
CLE – 2	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	Complete	Info Sharing Ongoing	N/A	Ohio County Village of Clearview	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
CLE – 3	Teach Community Emergency Response Team (CERT) classes.	Ongoing	Ongoing	Citizen Corps	WOCEMA Village of Clearview	Emergency Services
CLE – 4	Increase the number of trained citizen emergency responders.	Carry Over	Ongoing	Citizen Corps	American Red Cross Village of Clearview	Emergency Services
CLE – 5	Continue to participate in National Weather Service Storm Spotter classes.	Complete	Ongoing Classes	National Weather Service	National Weather Service Village of Clearview	Emergency Services
CLE – 6	Ensure that the Village adopt the revised EOP.	Complete	Ongoing Adoption of Updates	N/A	WOCEMA Village of Clearview	Emergency Services
CLE – 7	Develop a database of information on all repetitive loss properties including maps.	Carry Over	Ongoing	Assessor's Office, 911	WOCEMA WVDHSEM Village of Clearview	Prevention
CLE – 8	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	Carry Over	Ongoing	WVDOT	WOCEMA WVDOH Village of Clearview	Structural Projects
CLE – 9	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials.	Carry Over	Ongoing	HMEP	Wheeling-Ohio County LEPC	Emergency Services.

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
TRIADELPHIA						
TRI – 1	Distribute letters to all property owners in the Town regarding potential flood hazards as required for participation in the Community Rating System (CRS).	Carry Over	Ongoing	Local	Ohio County Town of Triadelphia	Public Education and Awareness
TRI – 2	Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	Complete	Updates Ongoing	WOCEMA	Ohio County City of Wheeling Town of Triadelphia	Public Education and Awareness
TRI – 3	Continue to hold local course on Nation Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	Carry Over	Ongoing	WVDHSEM	WVDHSEM Town of Triadelphia	Emergency Services
TRI – 4	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	Complete	Info Sharing Ongoing	N/A	Ohio County Town of Triadelphia	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
TRI – 5	Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).	Carry Over	Ongoing	N/A	County Animal Control WV Extension Service Society for the Prevention of Cruelty to Animals Town of Triadelphia	Emergency Services
TRI – 6	Teach Community Emergency Response Team (CERT) classes.	Ongoing	Ongoing	Citizen Corps	WOCEMA Town of Triadelphia	Emergency Services
TRI – 7	Increase the number of trained citizen emergency responders.	Ongoing	Ongoing	Citizen Corps	American Red Cross Town of Triadelphia	Emergency Services
TRI – 8	Continue to participate in National Weather Service Storm Spotter classes.	Carry Over	Ongoing Classes	National Weather Service	National Weather Service Town of Triadelphia	Emergency Services
TRI – 9	Work to update all floodplain ordinances.	Carry Over	5 yrs.	N/A	WOCEMA WVDHSEM Town of Triadelphia	Prevention
TRI – 10	Provide additional training to county and municipal development officials on NFIP requirements.	Carry Over	Ongoing	WVDHSEM	WVDHSEM Town of Triadelphia	Prevention

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
TRI – 11	Ensure that the Town adopt the revised EOP.	Complete	Ongoing Adoption of Updates	N/A	WOCEMA Town of Triadelphia	Emergency Services
TRI – 12	Conduct outreach efforts to educate town residents about the NFIP and its requirements.	Carry Over	Ongoing	WVDHSEM FEMA	WOCEMA Town of Triadelphia	Prevention
TRI – 13	Obtain updated information on the number of NFIP policyholders in the town.	Carry Over	Ongoing	N/A	WOCEMA WVDHSEM Town of Triadelphia	Prevention
TRI – 14	Collect updated information of the number and location of all repetitive loss properties.	Carry Over	Ongoing	N/A	WOCEMA WVDHSEM Town of Triadelphia	Prevention
TRI – 15	Develop a database of information on all repetitive loss properties including maps.	Carry Over	Ongoing	Assessor's Office, 911	WOCEMA WVDHSEM Town of Triadelphia	Prevention
TRI – 16	Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	Carry Over	Ongoing	Assessor's Office, 911	WVDHSEM Town of Triadelphia	Structural Projects

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
TRI – 17	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	Carry Over	Ongoing	WVDOT	WOCEMA WVDOH Town of Triadelphia	Structural Projects
TRI – 18	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials.	Carry Over	Ongoing	HMEP	Wheeling-Ohio County LEPC Town of Triadelphia	Emergency Services
VALLEY GROVE						
VAL – 1	Ensure that the Village adopt the revised EOP.	Complete	Ongoing Adoption of Updates	N/A	WOCEMA Village of Valley Grove	Emergency Services
WEST LIBERTY						
WES – 1	Ensure that the Town adopt the revised EOP.	Complete	Ongoing Adoption of Updates	N/A	WOCEMA Town of West Liberty	Emergency Services
WHEELING						
WHE – 1	Create displays for use at public events (health fair, public awareness day, county fair, city events).	Complete	Ongoing Updates	WVU/Local	WOCEMA WVU Extension Service City of Wheeling	Public Education and Awareness

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
WHE – 2	Create materials that are targeted towards tourist population.	Complete	Ongoing Updates	Wheeling Area Chamber of Commerce	Wheeling Area Chamber of Commerce City of Wheeling	Public Education and Awareness
WHE – 3	Utilize the media for the distribution and publication of hazard information.	Complete	Ongoing Updates	N/A	Ohio County Commission City of Wheeling	Public Education and Awareness
WHE – 4	Create a public speaking series on hazard related topics.	Complete	Main-tenance Ongoing	N/A	WOCEMA City of Wheeling	Public Education and Awareness
WHE – 5	Ensure that the Red Cross citizen's disaster course is held on a frequent basis.	Carry Over	Ongoing	N/A	American Red Cross City of Wheeling	Emergency Services
WHE – 6	Update the WOCEMA website to provide hazard related information that is easily accessible.	Complete	Main-tenance Ongoing	N/A	WOCEMA City of Wheeling	Emergency Services
WHE – 7	Continue to work with the Ohio County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.	Complete	Review/ Improve-ments Ongoing	N/A	WOCEMA Wheeling Fire Dept. Ohio County Schools City of Wheeling	Public Education and Awareness

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
WHE – 8	Continue to work with non-governmental organizations (youth, service, professional, religious) to promote mitigation education and awareness.	Complete	Review/ Improve-ments Ongoing	N/A	WOCEMA City of Wheeling	Public Education and Awareness
WHE – 9	Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	Complete	Main-tenance Ongoing	WOCEMA	WOCEMA City of Wheeling	Public Education and Awareness
WHE – 10	Distribute letters to all property owners in the City regarding potential flood hazards as required for participation in the Community Rating System (CRS).	Carry Over	Ongoing	Local	Ohio County City of Wheeling	Public Education and Awareness
WHE – 11	Establish all-hazard resource centers to be located in the main office of the City. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	Complete	Updates Ongoing	WOCEMA	Ohio County City of Wheeling	Public Education and Awareness

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
WHE – 12	Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	Carry Over	Ongoing	WVDHSEM	WVDHSEM City of Wheeling	Emergency Services
WHE – 13	Ensure that all shelters have adequate emergency power resources.	Complete	Monitor-ing Ongoing	N/A	American Red Cross City of Wheeling	Emergency Services
WHE – 14	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	Complete	Info Sharing Ongoing	N/A	Ohio County City of Wheeling	Emergency Services
WHE – 15	Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).	Carry Over	Ongoing	N/A	County Animal Control WV Extension Service Society for the Prevention of Cruelty to Animals City of Wheeling	Emergency Services
WHE – 16	Teach Community Emergency Response Team (CERT) classes.	Ongoing	Ongoing	Citizen Corps	WOCEMA City of Wheeling	Emergency Services
WHE – 17	Increase the number of trained citizen emergency responders.	Ongoing	Ongoing	Citizen Corps	American Red Cross City of Wheeling	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
WHE – 18	Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.	Complete	Exercises Ongoing	HMEP/ EMPG	WOCEMA City of Wheeling	Emergency Services
WHE – 19	Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.	Complete	Ongoing Training Oppor-tunities	RESA	RESA City of Wheeling	Emergency Services
WHE – 20	Continue to participate in National Weather Service Storm Spotter classes.	Complete	Ongoing Classes	National Weather Service	National Weather Service City of Wheeling	Emergency Services
WHE – 21	Work to update all floodplain ordinances.	Carry Over	5 yrs.	N/A	WOCEMA WVDHSEM City of Wheeling	Prevention
WHE – 22	Provide additional training to county and municipal development officials on NFIP requirements.	Carry Over	Ongoing	WVDHSEM	WVDHSEM City of Wheeling	Prevention
WHE – 23	Review the existing Wheeling-Ohio County EOP and update where necessary based on the recommendations of the Regional Hazard Mitigation Plan.	Complete	Review/ Update Ongoing	WOCEMA	WOCEMA	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
WHE – 24	Ensure that the City adopts the revised EOP.	Complete	Ongoing Adoption of Updates	N/A	WOCEMA	Emergency Services
WHE – 25	Expand the mission and membership of the Wheeling-Ohio County Local Emergency Planning Committee (LEPC) to act as a countywide disaster task force.	Complete	Ongoing Expan-sion	N/A	WOCEMA City of Wheeling	Emergency Services
WHE – 26	Assist in the development of the Ohio Co. Enterprise Geographical Information System (GIS) and assist with the implementation of the E911 Center's Computer Aided Dispatch system (CAD).	Carry Over	Ongoing	Assessor's Office, Police Dept., 911 County Commission	WOCEMA City of Wheeling	Emergency Services
WHE – 27	Conduct outreach efforts to educate municipalities about the NFIP and its requirements.	Carry Over	Ongoing	WVDHSEM FEMA	WOCEMA City of Wheeling	Prevention
WHE – 28	Obtain updated information on the number of NFIP policyholders in the City.	Carry Over	Ongoing	N/A	WOCEMA WVDHSEM City of Wheeling	Prevention
WHE – 29	Collect updated information of the number and location of all repetitive loss properties throughout the City.	Carry Over	Ongoing	N/A	WOCEMA WVDHSEM City of Wheeling	Prevention

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
WHE – 30	Develop a database of information on all repetitive loss properties including maps.	Carry Over	Ongoing	Assessor's Office, 911	WOCEMA WVDHSEM City of Wheeling	Prevention
WHE – 31	Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	Carry Over	Ongoing	Assessor's Office, 911	WVDHSEM City of Wheeling	Structural Projects
WHE – 32	Establish a formal process for the city and the county to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.	Complete	Ongoing Process Review	N/A	WOCEMA City of Wheeling	Emergency Services
WHE – 33	Conduct a survey of all historic sites that are located in hazard areas.	Carry Over	5 yrs.	National Historical Events	Wheeling Historical Society City of Wheeling	Prevention
WHE – 34	Develop mitigation strategies to protect any at-risk historic properties.	Carry Over	Ongoing	National Historical Events	Wheeling Historical Society, WOCEMA City of Wheeling	Prevention
WHE – 35	Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.	Complete	N/A	FEMA	WOCEMA City of Wheeling	Prevention

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
WHE – 36	Work with WV Department of Highway to identify areas of frequent roadway flooding and develop mitigation strategies.	Carry Over	Ongoing	WVDOT	WOCEMA WVDOH City of Wheeling	Structural Projects
WHE – 37	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in the City and County.	Carry Over	Ongoing	HMEP	Wheeling-Ohio County LEPC City of Wheeling	Emergency Services
WETZEL COUNTY						
WET – 1	Update the plan to monitor and clean storm water drainage systems within municipalities.	Carry Over	Ongoing	N/A	Floodplain Coordinators	Prevention
WET – 2	Construct floodwalls in flood prone areas and where feasible.	Deferred Project Carry Over	5 yrs.	CDBG NRCS WVOEP	WVDEP, USDA	Structural Projects
WET – 3	Create flood control dams in flood prone areas.	Deferred Project Carry Over	5 yrs.	CDBG NRCS WVOEP	WVDEP, USDA	Structural Projects
WET – 4	Coordinate with the WVDOH to conduct culvert inspections throughout the county.	Carry Over	Ongoing	WVDOT	WVDOH	Prevention

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
WET – 5	Strategically place several rain gauges throughout Wetzel County. Periodically check gauges and report results to county representatives.	Carry Over	Ongoing	TBD	WCOES	Emergency Services
WET – 6	Instate a countywide permitting process which will require residents and/or developers. To file a permit with the county before beginning any new construction as a means of regulating floodplain development.	Complete	Enforce-ment Ongoing	N/A	County Commission	Prevention
WET – 7	Instate countywide building codes, which will regulate the number of buildings and the materials used in buildings that are constructed in a floodplain.	Carry Over	5 yrs.	N/A	County Commission	Prevention
WET – 8	Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.	Carry Over	Ongoing	N/A	Floodplain Coordinators WCOES	Structural Projects
WET – 9	Continue to apply for funding for projects that will increase the county's CRS.	Carry Over	Ongoing	N/A	WCOES County Commission	Prevention

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
WET – 10	Coordinate with local fire departments to designate alternative routes with signage.	Carry Over	Ongoing	PDM	WCOES Fire Departments	Emergency Services
WET – 11	Coordinate with the West Virginia DOH to create more contracts for emergency snow removal.	Carry Over	Ongoing	WVDOT	WVDOH WCOES	Emergency Services
WET – 12	Increase the amount of snow removal equipment on county routes to speed up snow removal process.	Carry Over	Ongoing	WVDOT	WVDOH Private Contractors	Emergency Services
WET – 13	Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm.	Carry Over	Ongoing	Local Funds	WCOES	Public Education and Awareness
WET – 14	Coordinate efforts with local media to provide earlier warning to residents of impending hailstorms.	Carry Over	Ongoing	N/A	WCOES Local Media	Public Education and Awareness
WET – 15	Coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending sever wind or tornado conditions.	Complete	Ongoing Follow up	N/A	WCOES National Weather Service	Public Education and Awareness

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
WET – 16	Enforce county-wide building codes that model the statewide 90 mph wind load rating.	Carry Over	Ongoing	N/A	WCOES County Commission County Planning Office	Prevention
WET – 17	Instate countywide building codes which will regulate the number of buildings and the material used in buildings that are constructed.	Carry Over	5 yrs.	N/A	County Commission	Prevention
WET – 18	Reduce the amount of landslide occurrences in Wetzel County by monitoring clear cutting operations.	Carry Over	Ongoing	N/A	Municipalities WVDNR Timber Industry	Prevention
WET – 19	Develop an informational brochure explaining the potential for earthquakes, as well as the potential damages from those earthquakes. The brochure should include information on measures to take to safe-proof homes and other structures from the potential effects of earthquakes.	Carry Over	Ongoing	PDM	WCOES WVDHSEM	Public Education and Awareness
WET – 20	Coordinate with local public service districts to expand system capabilities.	Carry Over	Ongoing	CDBG, WVIJDC USDA	Municipalities	Structural Projects
WET – 21	Develop an informational brochure to distribute to local farmers and residents.	Carry Over	Ongoing	USDA	Farm Bureau, WVU Natural Resources Conservation Service	Public Education and Awareness

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
WET – 22	Publicize locations where residents can obtain water during severe drought conditions.	Carry Over	Ongoing	USDA	WCOES PSD's	Public Education and Awareness
WET – 23	Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires.	Carry Over	Ongoing	WVDNR State Park Commission	WVDNR	Public Education and Awareness
WET – 24	Coordinate with the power company to clear trees and other debris from electric lines throughout the county.	Carry Over	Ongoing	AEP	AEP County Commission	Prevention
WET – 25	Update terrorist annexes in county Emergency Operations Plans (EOPs).	Carry Over	Mainte-nance Ongoing	N/A	WCOES County Commission	Emergency Services
WET – 26	Make the public aware of how to prepare for a bomb threat and who to contact if there is a threat.	Carry Over	Ongoing	N/A	WCOES County Commission	Public Education and Awareness
WET – 27	Perform commodity flow studies to further assess when, where, and what hazardous materials can pass through and into the county.	Complete	Ongoing Follow Up	HMGP SERC PDM	County LEPC	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
WET – 28	Increase public education and awareness regarding hazardous materials (HAZMAT) incidents.	Complete	Ongoing	HMGP SERC PDM	WCOES	Public Education and Awareness
WET – 29	County will continue to seek out opportunities to apply for Hazard Mitigation Assistance (HMA) funds for mitigation reconstruction, elevations, relocations or acquisitions of identified at risk, repetitive loss, non-repetitive loss, substantial damaged, partially or completely demolished or destroyed properties within Wetzel County. If mitigation reconstruction is chosen, properties identified as partially or completely demolished, outside of the regulatory floodway, as identified by available flood hazard data, will be reconstructed in accordance with the standards established in the local floodplain ordinance and in accordance with the same conditions as an elevated structure. Wetzel County will comply with all acquisition, elevation, relocation and mitigation reconstruction requirements, as per the HMA Guidance.	NEW	Ongoing	HMA	Wetzel County	Structural Projects

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
HUNDRED						
HUN – 1	Coordinate with local fire departments to designate alternative routes with signage.	Carry Over	Ongoing	PDM	WCOES Fire Departments Town of Hundred	Emergency Services
HUN – 2	Reduce the amount of landslide occurrences in the Town by monitoring clear cutting operations.	Carry Over	Ongoing	N/A	WVDNR Timber Industry Town of Hundred	Prevention
NEW MARTINSVILLE						
NEW – 1	Update the plan to monitor and clean storm water drainage systems in the City.	Carry Over	Ongoing	N/A	Floodplain Coordinators City of New Martinsville	Prevention
NEW – 2	Construct floodwalls in flood prone areas and where feasible.	Deferred Project Carry Over	5 yrs.	CDBG NRCS WVOEP	WVDEP, USDA City of New Martinsville	Structural Projects
NEW – 3	Create flood control dams in flood prone areas.	Deferred Project Carry Over	5 yrs.	CDBG NRCS WVOEP	WVDEP, USDA City of New Martinsville	Structural Projects

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
NEW – 4	Continue to apply or Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.	Carry Over	Ongoing	N/A	Floodplain Coordinators WCOES City of New Martinsville	Structural Projects
NEW – 5	Coordinate with local fire departments to designate alternative routes with signage**.**	Carry Over	Ongoing	PDM	WCOES Fire Departments City of New Martinsville	Emergency Services
PADEN CITY						
PAD – 1	Construct floodwalls in flood prone areas and where feasible.	Deferred Project Carry Over	5 yrs.	CDBG NRCS WVOEP	WVDEP, USDA Paden City	Structural Projects
PAD – 2	Create flood control dams in flood prone areas.	Deferred Project Carry Over	5 yrs.	CDBG NRCS WVOEP	WVDEP, USDA Paden City	Structural Projects
PAD – 3	Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.	Carry Over	Ongoing	N/A	Floodplain Coordinators WCOES Paden City	Structural Projects
PAD – 4	Coordinate with local fire departments to designate alternative routes with signage.	Carry Over	Ongoing	PDM	WCOES Fire Departments Paden City	Emergency Services

Project	Description	Status	Time Frame	Funding Source	Coordinating Agency	Mitigation Type
PINE GROVE						
PIN – 1	Coordinate with local fire departments to designate alternative routes with signage.	Carry Over	Ongoing	PDM	WCOES Fire Departments Village of Pine Grove	Emergency Services
PIN – 2	Coordinate with local public service districts to expand systems capabilities.	Carry Over	Ongoing	CDBG, WVIJDC USDA	Village of Pine Grove	Structural Projects
SMITHFIELD						
SMI – 1	Coordinate with local fire departments to designate alternative routes with signage.	Carry Over	Ongoing	PDM	WCOES Fire Departments Town of Smithfield	Emergency Services
SMI – 2	Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm.	Carry Over	Ongoing	Local Funds	WCOES Town of Smithfield	Public Education and Awareness

CHAPTER 6.0 PLAN IMPLEMENTATION AND MAINTENANCE

This document guides the mitigation efforts in the region. It needs to be periodically reviewed and updated every 5 years. The periodic review should focus on the incorporation of new data, information, tools and technology. The mitigation efforts, documented in this plan, should be reviewed after each disaster for adequacy and relevancy. The plan should be modified as needed. The long term viability of this effort depends upon this periodic review and update. Performance measures identified for each project can also indicate if goals and objectives of this plan are being met.

The implementation of this plan also depends upon the availability of funding opportunities. The local jurisdictions range from the smallest Smithfield in Wetzel County with a population of 145 to Wheeling, Ohio County population 28,486. The availability of resources and financial capacity also varies. Therefore, outside funding assistance will be needed for some projects in the plan. Even though a local mitigation project may be a high priority project, yet it may not get done due the lack of financial resources at local, state or national level. The countywide EMAs oversee the preparedness and work closely with the first responders to provide resources where needed.

This plan also recognizes the need for generating local digital data that can lead to better analysis and planning. For example, digital elevation models can facilitate the dam inundation planning and help in identifying locations and deployment of resources based on travel time and response time scenarios. Parcel data with building foot prints can improve loss estimates. A data base of natural gas well and injection well sites and routes used to supply water and dispose of waste will be very useful in any disaster planning associated with hydraulic fracturing. Development of these databases is resource intensive and would require additional funds at local or regional level.

Each county has an Emergency Management Agency (EMA) overseeing the preparedness. These agencies support disaster mitigation efforts of local jurisdictions. In addition, they have instruments in place for crossing state lines for disaster mitigation. EMAs work closely with the local first responders to provide resources where needed. However, there are gaps where formal memorandums of understanding may be missing; need to be reaffirmed or need to be modified. The EMAs need to be equal partners in these MOUs. It is strongly believed that MOUs reduce response time and accelerate the mitigation efforts.

The maintenance and implementation of this plan falls within the purview of local jurisdictions and the county EMAs. Belomar Regional Council will provide assistance, as needed, with the revisions to this plan and any planning need that may arise in the future prior to the five year update cycle. Belomar will also support the mitigation actions and projects through planning and development efforts.

APPENDIX A

PUBLIC PARTICIPATION

EARLY PUBLIC PARTICIPATION NOTICE

PUBLIC NOTICE

Belomar Regional Council is in the process of updating the Marshall, Ohio and Wetzel Counties Multi-Jurisdictional Hazard Mitigation Plan. Hazard mitigation plans are required by the Disaster Mitigation Act of 2000. (DMA 2000: Public Law (PL) 106-390). The law reinforced the importance of mitigation planning, emphasizing planning before disasters occur.

The purpose of the 5 year plan update is to identify potential hazards, associated risks and actions for mitigation. As part of the planning process, we are seeking your input. Please complete a brief online survey and let us know your opinions on natural hazards and mitigations by April 8, 2016.

To complete the survey, please go to http://www.belomar.org/regional-hazard-mitigation-plan-survey/ or surveys will be available at the following public libraries:

Moundsville-Marshall County Public Library, 700 Fifth Street, Moundsville, WV

Ohio County Public Library, 52 Sixteenth Street, Wheeling, WV

New Martinsville Public Library, 160 Washington Street, New Martinsville, WV

Published:

Wheeling Intelligencer on March 20 and 21, 2016.

Wheeling News Register on March 20 and 21, 2016.

Wetzel County Chronicle on March 23 and 30, 2016

EARLY PARTICIPATION SURVEY QUESTIONNAIRE

Belomar Regional Council
P.O. Box 2086 • Wheeling, WV 26003
Phone: 304-242-1800
Fax: 304-242-2437

~ Regional Hazard Mitigation Plan Survey ~

Hazard mitigation plans are required by the Disaster Mitigation Act of 2000. (DMA 2000: Public Law (PL) 106-390). The law reinforced the importance of mitigation planning, emphasizing planning before disasters occur.
The first Hazard Mitigation Plan for the region was prepared in the year 2011 and we are in the process of updating that plan. The purpose of the plan is to identify potential hazards, associated risks and actions for mitigation. The hazard mitigation plan for Ohio, Marshall and Wetzel Counties is being prepared now.

Your input is very important. Please complete the brief survey to assist us with this planning effort.

Survey can be dropped in the box provided or mailed to the address above. Please respond by April 8, 2016.

Thanks!

How concerned are you about the following disasters affecting your county?

	Very Concerned	*Somewhat Concerned*	*Neutral*	*Not Very Concerned*	*Not Concerned*
Flooding	☐	☐	☐	☐	☐
Winter Storm	☐	☐	☐	☐	☐
Severe Wind	☐	☐	☐	☐	☐
Land Subsidence	☐	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐	☐
Hailstorm	☐	☐	☐	☐	☐
Sever Thunderstorm	☐	☐	☐	☐	☐
Drought	☐	☐	☐	☐	☐
Wildfire	☐	☐	☐	☐	☐
Hazmat Incident	☐	☐	☐	☐	☐
Terrorism	☐	☐	☐	☐	☐

Have you experienced any of the following events?

Flooding	☐	Sever Thunderstorm	☐
Winter Storm	☐	Drought	☐
Severe Wind	☐	Wildfire	☐
Land Subsidence	☐	Hazmat Incident	☐
Earthquake	☐	Terrorism	☐
Hailstorm	☐	Did Not Experience	☐

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Belomar Regional Council
P.O. Box 2086 • Wheeling, WV 26003
Phone: 304-242-1800
Fax: 304-242-2437

Have you or someone else in your household done any of the follwoing: (Check more than one action, if applicable)

	Have Done	*Not Done*	*Plan To Do*
Attend meetings or received written information on natural disasters or emergency preparedness?	☐	☐	☐
Talked with members in your household about what to do in case of a natural disaster or emergency?	☐	☐	☐
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	☐	☐	☐
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries or other emergency supplies)?	☐	☐	☐
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulminary Resucitation (CPR)?	☐	☐	☐
Prepared your home by having smoke detectors on each level of your house?	☐	☐	☐
Discussed or created a utility shutoff procedure in the event of a natural disaster?	☐	☐	☐

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Belomar Regional Council
P.O. Box 2086 • Wheeling, WV 26003
Phone: 304-242-1800
Fax: 304-242-2437

~ Regional Hazard Mitigation Plan Survey ~

What was the year of your involvement?
AND/OR Do you remember the most recent year for any of the events?

Flooding	_____	Sever Thunderstorm	_____
Winter Storm	_____	Drought	_____
Severe Wind	_____	Wildfire	_____
Land Subsidence	_____	Hazmat Incident	_____
Earthquake	_____	Terrorism	_____
Hailstorm	_____	Dam Failure	_____

In your opinion, what is the likelihood of these happening in the future?

	Frequently	*Occasionally*	*Rarely*	*Never*
Flooding	☐	☐	☐	☐
Winter Storm	☐	☐	☐	☐
Severe Wind	☐	☐	☐	☐
Land Subsidence	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐
Hailstorm	☐	☐	☐	☐
Sever Thunderstorm	☐	☐	☐	☐
Drought	☐	☐	☐	☐
Wildfire	☐	☐	☐	☐
Hazmat Incident	☐	☐	☐	☐
Terrorism	☐	☐	☐	☐
Dam Failure	☐	☐	☐	☐

Belomar Regional Council
P.O. Box 2086 • Wheeling, WV 26003
Phone: 304-242-1800
Fax: 304-242-2437

Do you feel that your community is prepared for these events?

	Yes	*No*	*Don't Know*
Flooding	☐	☐	☐
Winter Storm	☐	☐	☐
Severe Wind	☐	☐	☐
Land Subsidence	☐	☐	☐
Earthquake	☐	☐	☐
Hailstorm	☐	☐	☐
Sever Thunderstorm	☐	☐	☐
Drought	☐	☐	☐
Wildfire	☐	☐	☐
Hazmat Incident	☐	☐	☐
Terrorism	☐	☐	☐
Dam Failure	☐	☐	☐

Do you have general comments or specific suggestions for mitigation?

Thank You

DRAFT PLAN
PUBLIC PARTICIPATION NOTICE

PUBLIC NOTICE

Belomar Regional Council is in the process of updating the Marshall, Ohio and Wetzel Counties Hazard Mitigation Plan. Hazard mitigation plans are required by the Disaster Mitigation Act of 2000. (DMA 2000: Public Law (PL) 106-390). The law reinforced the importance of mitigation planning, emphasizing planning before disasters occur.

A draft Hazard Mitigation Plan has been prepared. The purpose of the 5 year plan update is to identify potential hazards, associated risks and actions for mitigation. The draft plan is available on our website at http://www.belomar.org and Facebook page at https://www.facebook.com/belomarmpo. It is also available at the following libraries:

Moundsville-Marshall County Public Library, 700 Fifth Street, Moundsville, WV

Ohio County Public Library, 52 Sixteenth Street, Wheeling, WV

New Martinsville Public Library, 160 Washington Street, New Martinsville, WV

Please review the draft plan and provide written comments to:

Comments: Hazard Mitigation Plan
Belomar Regional Council
P.O. Box 2086
Wheeling WV 26003

Comments can be mailed to the above address or emailed to lmullin@belomar.org.
Comments must be received by December 22nd.

Three open houses will also be held. The time and location of open houses are:

Marshall County Commission Office, 600 7th Street,
Moundsville, WV December 19th 11am-2pm

Belomar Regional Council,105 Bridge Street Plaza,
Wheeling, WV December 20th from 3pm-6pm

Wetzel County Commission Office, 200 Main Street,
New Martinsville, WV December 21st 2pm-5pm

Your input is very important.

Published:

Wheeling Intelligencer on December 12, 2016.
Wheeling News Register on December 12, 2016.
Moundsville Echo on December 12, 2016.
Wetzel Chronicle on December 14, 2016.

OPEN HOUSES

Marshall County

Held on: December 19, 2016

Location: Marshall County Commission Office
600 7th Street
Moundsville, WV 26041

Time: 11:00 a.m. – 2:00 p.m.

Ohio County

Held on: December 20, 2016

Location: Belomar Regional Council
105 Bridge Street Plaza
Wheeling, WV 26003

Time: 3:00 p.m. – 6:00 p.m.

Wetzel County

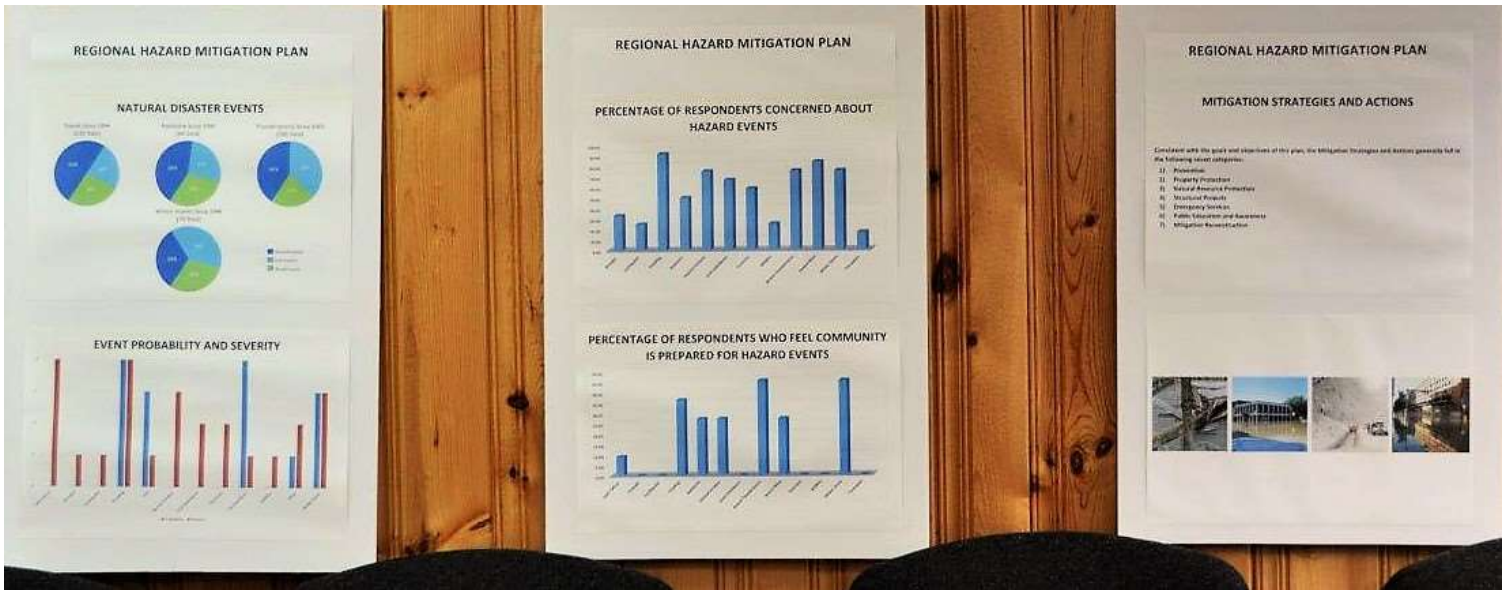
Held on: December 21, 2016

Location: Wetzel County Commission Office
200 Main Street
New Martinsville, WV 26155

Time: 2:00 p.m. – 5:00 p.m.

GRAPHIC DISPLAYS

USED FOR THE OPEN HOUSES



OPEN HOUSE SIGN-IN SHEETS

In spite of multiple opportunities at various stages of the plan development, multiple announcements at policy board meetings, multiple display advertisements, plan document availability at local libraries, availability on the agency's website and Facebook page, opportunities to provide input/comments on the website, via email, via USPS mail, by phone, by appointment or at open houses, the only input was received in response to a survey. For the next plan update, it is recommended that a public survey as a tool be explored at various stages of the plan development.

REGIONAL HAZARD MITIGATION PLAN OPEN HOUSE
Monday December 19, 2016
11:00am – 2:00pm
Courthouse, Moundsville, WV

Name	Affiliation
A.C. Wiethe	Belmar
[illegible]	Belmar

Regional Hazard Mitigation Plan Open House

Tuesday, December 20, 2016
3:00pm to 6:00pm
Belomar Conference Room, Wheeling, WV

Name (please print name)	**Affiliation**
A. Shaman	Belomar
James Benner	Belomar
A.C. Wheeler	Belomar
Lisa Mullin	Belomar
Judith Kennedy	Belomar
Paul P. Healy	Belomar

Regional Hazard Mitigation Plan Open House

Wednesday, December 21, 2016
2:00pm to 5:00pm
Wetzel County Courthouse, New Martinsville, WV

Name (please print name)	**Affiliation**
James Benner	Belomar

APPENDIX B

RESPONSE TO PREVIOUS PLAN RECOMMENDATIONS

Recommendations for Improvements
Local Hazard Mitigation Plan
PDC 10
West Virginia- Region III

1. Future plan updates should better identify the makeup of the planning committee. Identify changes of committee members and identify roles in the plan development.

As in the previous plan, the county Emergency Management Agencies (EMAs) played the lead role in this plan update. In addition, to the EMA director of each county, Ohio County GIS Coordinator and Planning Officer and the Deputy Director of EMA also participated.

The EMA directors are the lead official of each county and play a role in the hazard mitigation planning and actions of all jurisdictions in the county.

2. Future plan updates might better capture if the plans public participation efforts were successful. Did the planned public activities work, what has been changed to obtain more public participation? Have other changes been made; plan in library, fliers in Grocery stores, senior citizen center, etc.

A threshold of acceptable public participation has not been clearly defined in the planning profession. Cost per response can also be a consideration. Public Participation is also measured in terms of opportunities provided for public participation. Multiple opportunities were provided at different stages of the plan update. Staff considers the outreach effort was successful.

3. Future plan updates should better describe how the jurisdiction reviewed and integrated information in the plan from existing plans, studies, reports, and technical documents.

In any plan development, a literature review is necessary. Such a review of other plans, studies and technical documents was conducted and incorporated. Customary references are provided in the document at appropriated places. Key documents integrated in this update are also mentioned in the report.

4. Dam inundation maps could be included in the updated plan.

They are included in this update.

5. If possible, longer intervals for event history for each hazard should be included in the plan. The longer the interval of previous events, the more accurate probability of future events.

This is dependent upon the availability of the verified data for each hazard from one source. Better plans can result if event data at county level is available from one source. For consistency and relative comparisons, it was felt the data source and time intervals be consistent. Longest time intervals available for all three counties were used.

6. A more detailed summary of past hazard events for each hazard needs to be added; including dollar losses, number of buildings affected, etc.

Staff has presented the level of detail that correspondence to the level of data availability for each hazard.

7. A better description of planned development in hazard areas needs to be included in the next plan update.

This update draws from the planning documents that have addressed the future development. Recently approved Long Range Transportation Plan for the year 2040 and the Comprehensive Economic Development Strategy (CEDS) were utilized.

8. A more detailed description of the jurisdictions participation in the NFIP is needed. Items that could be included in the plan are for example: how the inspection on new construction occurs to ensure compliance with the floodplain ordinance, how residents are assisted in floodplain questions, how the jurisdictions review development plans to ensure compliance with the NFIP, how violations are dealt with in the jurisdictions.

The suggested items are included in the plan.

9. A thorough reporting on the progress in implementing mitigation actions needs to be included when the plan is updated.

It is included in the plan.

10. Data from the State of West Virginia all hazard mitigation plan should be included in the plan when it is updated next.

The Most recent available data and the longest time intervals are included in this plan and the data from the state plan is incorporated as needed.

11. The planning team should consider developing more specific mitigation projects and list them in the next updated version of the plan.

Planning team has done due diligence in developing locally acceptable mitigation projects and listed them in the plan.

12. The next plan update must integrate this plan with other existing plans. Specific information pertaining to applicable sections should be noted in next update of the hazard mitigation plan.

This plan has integrated information from other existing plans. The integration of other plans is noted as needed.

APPENDIX C

STEERING COMMITTEE MEMBERSHIP

STEERING COMMITTEE MEMBERSHIP

NAME	AGENCY	TITLE
Lou J. Vargo	Wheeling–Ohio County Homeland Security and Emergency Management Agency	Director
Tom D. Hart	Marshall County Office of Emergency Management	Director
Edgar W. Sapp	Wetzel County Office of Emergency Management	Director
Wayland Harris	Wheeling-Ohio County Office of Emergency Management	Deputy Director
Dave Weaver	Wheeling Ohio County Homeland Security and Emergency Management Agency	Planning Officer and GIS Coordinator
A.C. Wiethe	Belomar Management Services Department	Director
Lisa Mullin	Belomar Management Services Department	Community Development Specialist
Rakesh Sharma	Belomar Transportation Department	Director
James Benner	Belomar	GIS Coordinator/Planning Assistant

APPENDIX D

HAZARD PROFILES:

REFERENCES

Federal Emergency Management Agency. Dam. Retrieved from https://www.fema.gov/why-dams-fail

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APPENDIX E

LOSS ESTIMATES

BY COUNTY

OHIO COUNTY

Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	989	709	72%	$411,197,000	$364,933,300	89%			
Education	73	20	27%	$80,441,800	$16,756,700	21%			
Industrial	13	12	92%	$4,416,600	$4,412,700	100%			
Institution	83	50	60%	$23,143,200	$17,020,200	74%			
Residential	10,061	6,035	60%	$783,907,700	$377,474,300	48%			
Unspecified/Unknown	8,416	5,854	70%	$648,238,300	$375,382,000	58%			
Total	**19,635**	**12,680**	**65%**	**$1,951,344,600**	**$1,155,979,200**	**59%**	**44,443**	**26,668**	**60%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Hazardous Materials

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	989	936	95%	$411,197,000	$408,796,500	99%			
Education	73	71	97%	$80,441,800	$80,441,800	100%			
Industrial	13	12	92%	$4,416,600	$4,412,700	100%			
Institution	83	77	93%	$23,143,200	$23,023,200	99%			
Residential	10,061	8,266	82%	$783,907,700	$664,174,000	85%			
Unspecified/Unknown	8,416	8,324	99%	$648,238,300	$644,434,200	99%			
Total	**19,635**	**17,686**	**90%**	**$1,951,344,600**	**$1,825,282,400**	**94%**	**44,443**	**40,358**	**91%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Fracking

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	989	402	41%	$411,197,000	$150,618,200	37%			
Education	73	25	34%	$80,441,800	$7,074,500	9%			
Industrial	13	7	54%	$4,416,600	$4,056,800	92%			
Institution	83	30	36%	$23,143,200	$1,803,600	8%			
Residential	10,061	4,455	44%	$783,907,700	$350,685,700	45%			
Unspecified/Unknown	8,416	832	10%	$648,238,300	$83,837,400	13%			
Total	**19,635**	**5,751**	**29%**	**$1,951,344,600**	**$598,076,200**	**31%**	**44,443**	**14,111**	**32%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Land Subsidence

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	989	358	36%	$411,197,000	$167,420,700	41%			
Education	73	18	25%	$80,441,800	$2,144,200	3%			
Industrial	13	3	23%	$4,416,600	$3,246,100	73%			
Institution	83	30	36%	$23,143,200	$1,785,200	8%			
Residential	10,061	4,854	48%	$783,907,700	$456,103,400	58%			
Unspecified/Unknown	8,416	1,883	22%	$648,238,300	$189,021,500	29%			
Total	**19,635**	**7,146**	**36%**	**$1,951,344,600**	**$819,721,100**	**42%**	**44,443**	**18,657**	**42%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Terrorism

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	989	737	75%	$411,197,000	$364,344,400	89%			
Education	73	48	66%	$80,441,800	$73,367,300	91%			
Industrial	13	7	54%	$4,416,600	$799,100	18%			
Institution	83	55	66%	$23,143,200	$21,202,400	92%			
Residential	10,061	6,132	61%	$783,907,700	$501,243,400	64%			
Unspecified/Unknown	8,416	8,173	97%	$648,238,300	$627,845,600	97%			
Total	**19,635**	**15,152**	**77%**	**$1,951,344,600**	**$1,588,802,200**	**81%**	**44,443**	**34,249**	**77%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Winter Storm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	989	989	100%	$411,197,000	$411,197,000	100%			
Education	73	73	100%	$80,441,800	$80,441,800	100%			
Industrial	13	13	100%	$4,416,600	$4,416,600	100%			
Institution	83	83	100%	$23,143,200	$23,143,200	100%			
Residential	10,061	10,061	100%	$783,907,700	$783,907,700	100%			
Unspecified/Unknown	8,416	8,416	100%	$648,238,300	$648,238,300	100%			
Total	**19,635**	**19,635**	**100%**	**$1,951,344,600**	**$1,951,344,600**	**100%**	**44,443**	**44,443**	**100%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Thunderstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	989	989	100%	$411,197,000	$411,197,000	100%			
Education	73	73	100%	$80,441,800	$80,441,800	100%			
Industrial	13	13	100%	$4,416,600	$4,416,600	100%			
Institution	83	83	100%	$23,143,200	$23,143,200	100%			
Residential	10,061	10,061	100%	$783,907,700	$783,907,700	100%			
Unspecified/Unknown	8,416	8,416	100%	$648,238,300	$648,238,300	100%			
Total	**19,635**	**19,635**	**100%**	**$1,951,344,600**	**$1,951,344,600**	**100%**	**44,443**	**44,443**	**100%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Hailstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	989	0	0%	$411,197,000	$0	0%			
Education	73	0	0%	$80,441,800	$0	0%			
Industrial	13	0	0%	$4,416,600	$0	0%			
Institution	83	0	0%	$23,143,200	$0	0%			
Residential	10,061	0	0%	$783,907,700	$0	0%			
Unspecified/Unknown	8,416	0	0%	$648,238,300	$0	0%			
Total	**19,635**	**0**	**0%**	**$1,951,344,600**	**$0**	**0%**	**44,443**	**0**	**0%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Earthquake

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	989	0	0%	$411,197,000	$0	0%			
Education	73	0	0%	$80,441,800	$0	0%			
Industrial	13	0	0%	$4,416,600	$0	0%			
Institution	83	0	0%	$23,143,200	$0	0%			
Residential	10,061	0	0%	$783,907,700	$0	0%			
Unspecified/Unknown	8,416	0	0%	$648,238,300	$0	0%			
Total	**19,635**	**0**	**0%**	**$1,951,344,600**	**$0**	**0%**	**44,443**	**0**	**0%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	989	114	12%	$411,197,000	$11,302,700	3%			
Education	73	1	1%	$80,441,800	$0	0%			
Industrial	13	0	0%	$4,416,600	$0	0%			
Institution	83	9	11%	$23,143,200	$460,000	2%			
Residential	10,061	2,397	24%	$783,907,700	$186,473,300	24%			
Unspecified/Unknown	8,416	118	1%	$648,238,300	$10,752,500	2%			
Total	**19,635**	**2,639**	**13%**	**$1,951,344,600**	**$208,988,500**	**11%**	**44,443**	**8,340**	**19%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Flooding

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	989	203	21%	$411,197,000	$159,652,992	39%			
Education	73	4	5%	$80,441,800	$2,626,333	3%			
Industrial	13	5	38%	$4,416,600	$2,215,381	50%			
Institution	83	12	14%	$23,143,200	$6,912,563	30%			
Residential	10,061	1,039	10%	$783,907,700	$222,422,962	28%			
Unspecified/Unknown	8,416	2,038	24%	$648,238,300	$527,839,360	81%			
Total	**19,635**	**3,301**	**17%**	**$1,951,344,600**	**$921,669,591**	**47%**	**44,443**	**8,913**	**20%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Severe Wind

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	989	989	100%	$411,197,000	$411,197,000	100%			
Education	73	73	100%	$80,441,800	$80,441,800	100%			
Industrial	13	13	100%	$4,416,600	$4,416,600	100%			
Institution	83	83	100%	$23,143,200	$23,143,200	100%			
Residential	10,061	10,061	100%	$783,907,700	$783,907,700	100%			
Unspecified/Unknown	8,416	8,416	100%	$648,238,300	$648,238,300	100%			
Total	**19635**	**19635**	**100%**	**$1,951,344,600**	**$1,951,344,600**	**100%**	**44,443**	**44,443**	**100%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

MARSHALL COUNTY

Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	291	219	75%	$91,115,160	$79,126,530	87%			
Education	15	10	67%	$9,795,840	$6,946,980	71%			
Industrial	49	35	71%	$14,612,120	$11,930,900	82%			
Institution	61	29	48%	$5,598,120	$2,826,120	50%			
Residential	5,513	3,326	60%	$267,613,050	$207,831,600	78%			
Unspecified/Unknown	10,600	6,748	64%	$834,345,350	$604,456,890	72%			
Total	**16,529**	**10,367**	**63%**	**$1,223,079,640**	**$913,119,020**	**75%**	**33,107**	**20,666**	**62%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Hazardous Materials

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	291	261	90%	$91,115,160	$89,110,750	98%			
Education	15	13	87%	$9,795,840	$9,574,620	98%			
Industrial	49	25	51%	$14,612,120	$9,607,200	66%			
Institution	61	42	69%	$5,598,120	$4,012,800	72%			
Residential	5,513	3,384	61%	$267,613,050	$188,674,680	71%			
Unspecified/Unknown	10,600	8,794	83%	$834,345,350	$700,959,240	84%			
Total	**16,529**	**12,519**	**76%**	**$1,223,079,640**	**$1,001,939,290**	**82%**	**33,107**	**25,310**	**76%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Fracking

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	291	83	29%	$91,115,160	$10,558,010	12%			
Education	15	6	40%	$9,795,840	$1,712,760	17%			
Industrial	49	30	61%	$14,612,120	$12,356,680	85%			
Institution	61	36	59%	$5,598,120	$2,949,900	53%			
Residential	5,513	2,810	51%	$267,613,050	$107,405,490	40%			
Unspecified/Unknown	10,600	5,821	55%	$834,345,350	$310,559,750	37%			
Total	**16,529**	**8,786**	**53%**	**$1,223,079,640**	**$445,542,590**	**36%**	**33,107**	**17,708**	**53%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Land Subsidence

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	291	53	18%	$91,115,160	$17,734,280	19%			
Education	15	8	53%	$9,795,840	$4,668,300	48%			
Industrial	49	20	41%	$14,612,120	$4,984,350	34%			
Institution	61	15	25%	$5,598,120	$1,900,740	34%			
Residential	5,513	2,240	41%	$267,613,050	$153,026,740	57%			
Unspecified/Unknown	10,600	4,463	42%	$834,345,350	$355,579,100	43%			
Total	**16,529**	**6,799**	**41%**	**$1,223,079,640**	**$537,893,510**	**44%**	**33,107**	**15,104**	**46%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Terrorism

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	291	180	62%	$91,115,160	$78,290,020	86%			
Education	15	7	47%	$9,795,840	$3,044,580	31%			
Industrial	49	3	6%	$14,612,120	$1,228,200	8%			
Institution	61	20	33%	$5,598,120	$2,394,000	43%			
Residential	5,513	1,267	23%	$267,613,050	$127,251,990	48%			
Unspecified/Unknown	10,600	6,688	63%	$834,345,350	$402,921,480	48%			
Total	**16,529**	**8,165**	**49%**	**$1,223,079,640**	**$615,130,270**	**50%**	**33,107**	**16,888**	**51%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Winter Storm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	291	291	100%	$91,115,160	$91,115,160	100%			
Education	15	15	100%	$9,795,840	$9,795,840	100%			
Industrial	49	49	100%	$14,612,120	$14,612,120	100%			
Institution	61	61	100%	$5,598,120	$5,598,120	100%			
Residential	5,513	5,513	100%	$267,613,050	$267,613,050	100%			
Unspecified/Unknown	10,600	10,600	100%	$834,345,350	$834,345,350	100%			
Total	**16,529**	**16,529**	**100%**	**$1,223,079,640**	**$1,223,079,640**	**100%**	**33,107**	**33,107**	**100%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Thunderstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	291	291	100%	$91,115,160	$91,115,160	100%			
Education	15	15	100%	$9,795,840	$9,795,840	100%			
Industrial	49	49	100%	$14,612,120	$14,612,120	100%			
Institution	61	61	100%	$5,598,120	$5,598,120	100%			
Residential	5,513	5,513	100%	$267,613,050	$267,613,050	100%			
Unspecified/Unknown	10,600	10,600	100%	$834,345,350	$834,345,350	100%			
Total	**16,529**	**16,529**	**100%**	**$1,223,079,640**	**$1,223,079,640**	**100%**	**33,107**	**33,107**	**100%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Hailstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	291	0	0%	$91,115,160	$0	0%			
Education	15	0	0%	$9,795,840	$0	0%			
Industrial	49	0	0%	$14,612,120	$0	0%			
Institution	61	0	0%	$5,598,120	$0	0%			
Residential	5,513	0	0%	$267,613,050	$0	0%			
Unspecified/Unknown	10,600	0	0%	$834,345,350	$0	0%			
Total	**16,529**	**0**	**0%**	**$1,223,079,640**	**$0**	**0%**	**33,107**	**0**	**0%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Earthquake

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	291	0	0%	$91,115,160	$0	0%			
Education	15	0	0%	$9,795,840	$0	0%			
Industrial	49	0	0%	$14,612,120	$0	0%			
Institution	61	0	0%	$5,598,120	$0	0%			
Residential	5,513	0	0%	$267,613,050	$0	0%			
Unspecified/Unknown	10,600	0	0%	$834,345,350	$0	0%			
Total	**16,529**	**0**	**0%**	**$1,223,079,640**	**$0**	**0%**	**33,107**	**0**	**0%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	291	37	13%	$91,115,160	$8,150,610	9%			
Education	15	3	20%	$9,795,840	$262,740	3%			
Industrial	49	24	49%	$14,612,120	$1,289,620	9%			
Institution	61	20	33%	$5,598,120	$1,550,460	28%			
Residential	5,513	2,593	47%	$267,613,050	$90,067,860	34%			
Unspecified/Unknown	10,600	2,515	24%	$834,345,350	$135,062,000	16%			
Total	**16,529**	**5,192**	**31%**	**$1,223,079,640**	**$236,383,290**	**19%**	**33,107**	**14,793**	**45%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Flooding

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	291	76	26%	$91,115,160	$26,641,192	29%			
Education	15	1	7%	$9,795,840	$2,940,000	30%			
Industrial	49	8	16%	$14,612,120	$1,331,760	9%			
Institution	61	5	8%	$5,598,120	$563,987	10%			
Residential	5,513	490	9%	$267,613,050	$79,911,905	30%			
Unspecified/Unknown	10,600	832	8%	$834,345,350	$152,492,676	18%			
Total	**16,529**	**1,412**	**9%**	**$1,223,079,640**	**$263,881,520**	**22%**	**33,107**	**4,373**	**13%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Severe Wind

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	291	291	100%	$91,115,160	$91,115,160	100%			
Education	15	15	100%	$9,795,840	$9,795,840	100%			
Industrial	49	49	100%	$14,612,120	$14,612,120	100%			
Institution	61	61	100%	$5,598,120	$5,598,120	100%			
Residential	5,513	5,513	100%	$267,613,050	$267,613,050	100%			
Unspecified/Unknown	10,600	10,600	100%	$834,345,350	$834,345,350	100%			
Total	**16,529**	**16,529**	**100%**	**$1,223,079,640**	**$1,223,079,640**	**100%**	**33,107**	**33,107**	**100%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

WETZEL COUNTY

Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	469	281	60%	$103,409,440	$94,144,120	91%			
Education	15	5	33%	$14,558,490	$6,663,000	46%			
Industrial	2	0	0%	$49,800	$0	0%			
Institution	86	21	24%	$6,529,740	$21	0%			
Residential	7,135	2,627	37%	$194,682,000	$2,627	0%			
Unspecified/Unknown	2,377	914	38%	$295,633,820	$914	0%			
Total	**10,084**	**3,848**	**38%**	**$614,863,290**	**$100,810,682**	**16%**	**16,583**	**6,559**	**40%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Hazardous Materials

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	469	458	98%	$103,409,440	$103,191,730	100%			
Education	15	13	87%	$14,558,490	$14,508,690	100%			
Industrial	2	2	100%	$49,800	$49,800	100%			
Institution	86	67	78%	$6,529,740	$6,315,420	97%			
Residential	7,135	5,721	80%	$194,682,000	$166,201,070	85%			
Unspecified/Unknown	2,377	1,946	82%	$295,633,820	$287,870,830	97%			
Total	**10,084**	**8,207**	**81%**	**$614,863,290**	**$578,137,540**	**94%**	**16,583**	**13,032**	**79%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Fracking

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	469	321	68%	$103,409,440	$84,924,520	82%			
Education	15	10	67%	$14,558,490	$11,723,670	81%			
Industrial	2	1	50%	$49,800	$49,800	100%			
Institution	86	55	64%	$6,529,740	$4,876,800	75%			
Residential	7,135	4,428	62%	$194,682,000	$133,644,970	69%			
Unspecified/Unknown	2,377	1,045	44%	$295,633,820	$245,756,280	83%			
Total	**10,084**	**5,860**	**58%**	**$614,863,290**	**$480,976,040**	**78%**	**16,583**	**9,997**	**60%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Land Subsidence

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	469	0	0%	$103,409,440	$0	0%			
Education	15	0	0%	$14,558,490	$0	0%			
Industrial	2	0	0%	$49,800	$0	0%			
Institution	86	0	0%	$6,529,740	$0	0%			
Residential	7,135	7	0%	$194,682,000	$51,940	0%			
Unspecified/Unknown	2,377	5	0%	$295,633,820	$4,860	0%			
Total	**10,084**	**12**	**0%**	**$614,863,290**	**$56,800**	**0%**	**16,583**	**26**	**0%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Terrorism

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	469	307	65%	$103,409,440	$95,653,580	92%			
Education	15	6	40%	$14,558,490	$6,902,160	47%			
Industrial	2	0	0%	$49,800	$0	0%			
Institution	86	27	31%	$6,529,740	$4,251,840	65%			
Residential	7,135	3,219	45%	$194,682,000	$108,025,780	55%			
Unspecified/Unknown	2,377	790	33%	$295,633,820	$226,054,710	76%			
Total	**10,084**	**4,349**	**43%**	**$614,863,290**	**$440,888,070**	**72%**	**16,583**	**7,576**	**46%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Winter Storm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	469	469	100%	$103,409,440	$103,409,440	100%			
Education	15	15	100%	$14,558,490	$14,558,490	100%			
Industrial	2	2	100%	$49,800	$49,800	100%			
Institution	86	86	100%	$6,529,740	$6,529,740	100%			
Residential	7,135	7,135	100%	$194,682,000	$194,682,000	100%			
Unspecified/Unknown	2,377	2,377	100%	$295,633,820	$295,633,820	100%			
Total	**10,084**	**10,084**	**100%**	**$614,863,290**	**$614,863,290**	**100%**	**16,583**	**16,583**	**100%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Thunderstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	469	469	100%	$103,409,440	$103,409,440	100%			
Education	15	15	100%	$14,558,490	$14,558,490	100%			
Industrial	2	2	100%	$49,800	$49,800	100%			
Institution	86	86	100%	$6,529,740	$6,529,740	100%			
Residential	7,135	7,135	100%	$194,682,000	$194,682,000	100%			
Unspecified/Unknown	2,377	2,377	100%	$295,633,820	$295,633,820	100%			
Total	**10,084**	**10,084**	**100%**	**$614,863,290**	**$614,863,290**	**100%**	**16,583**	**16,583**	**100%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Hailstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	469	0	0%	$103,409,440	$0	0%			
Education	15	0	0%	$14,558,490	$0	0%			
Industrial	2	0	0%	$49,800	$0	0%			
Institution	86	0	0%	$6,529,740	$0	0%			
Residential	7,135	0	0%	$194,682,000	$0	0%			
Unspecified/Unknown	2,377	0	0%	$295,633,820	$0	0%			
Total	**10,084**	**0**	**0%**	**$614,863,290**	**$0**	**0%**	**16,583**	**0**	**0%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Earthquake

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	469	0	0%	$103,409,440	$0	0%			
Education	15	0	0%	$14,558,490	$0	0%			
Industrial	2	0	0%	$49,800	$0	0%			
Institution	86	0	0%	$6,529,740	$0	0%			
Residential	7,135	0	0%	$194,682,000	$0	0%			
Unspecified/Unknown	2,377	0	0%	$295,633,820	$0	0%			
Total	**10,084**	**0**	**0%**	**$614,863,290**	**$0**	**0%**	**16,583**	**0**	**0%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	469	42	9%	$103,409,440	$1,755,470	2%			
Education	15	2	13%	$14,558,490	$99,510	1%			
Industrial	2	2	100%	$49,800	$49,800	100%			
Institution	86	26	30%	$6,529,740	$1,091,640	17%			
Residential	7,135	2,410	34%	$194,682,000	$53,615,450	28%			
Unspecified/Unknown	2,377	785	33%	$295,633,820	$19,831,090	7%			
Total	**10,084**	**3,267**	**32%**	**$614,863,290**	**$76,442,960**	**12%**	**16,583**	**7,775**	**47%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Flooding

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	469	187	40%	$165,455,104	$64,444,912	39%			
Education	15	6	40%	$23,293,584	$15,237,648	65%			
Industrial	2	2	100%	$79,680	$79,680	100%			
Institution	86	32	37%	$10,447,584	$3,301,632	32%			
Residential	7,135	1,442	20%	$311,491,200	$60,849,824	20%			
Unspecified/Unknown	2,377	300	13%	$473,014,112	$126,241,952	27%			
Total	**10,084**	**1,969**	**20%**	**$983,781,264**	**$270,155,648**	**27%**	**16,583**	**4,821**	**29%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Severe Wind

Type of Structure (Occupancy Class)	Number of Structures			Value of Structure			Number of People		
	# in Community	# in Hazard Area	% in Hazard	$ in Community or	$ in Hazard Area	% in Hazard	# in Community	# in Hazard	% in Hazard
Commercial/Service/Utilities	469	469	100%	$103,409,440	$103,409,440	100%			
Education	15	15	100%	$14,558,490	$14,558,490	100%			
Industrial	2	2	100%	$49,800	$49,800	100%			
Institution	86	86	100%	$6,529,740	$6,529,740	100%			
Residential	7,135	7,135	100%	$194,682,000	$194,682,000	100%			
Unspecified/Unknown	2,377	2,377	100%	$295,633,820	$295,633,820	100%			
Total	**10,084**	**10,084**	**100%**	**$614,863,290**	**$614,863,290**	**100%**	**16,583**	**16,583**	**100%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damage?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

APPENDIX G

LIST OF ACRONYMS

ACRONYMS

AEP	American Electric Power
CAD	Computer Aided Dispatch System
CDBG	Community Development Block Grant
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERT	Community Emergency Response Team
COOP	Continuity of Operations
DHHR	Department of Health and Human Resources
EMA	Emergency Management Agency
EMPG	Emergency Management Performance Grant
EOP	Emergency Operations Plan
FEMA	Federal Emergency Management Agency
GIS	Geographical Information Systems
HMA	Hazard Mitigation Assistance
HMEP	Hazardous Materials Emergency Planning
HMGP	Hazard Mitigation Grant Program
LEPC	Local Emergency Planning Committee (LEPC)
NCDC	National Climate Data Center
NFIP	National Flood Insurance Program
NRCS	National Resources Conservation Services
PDM	Pre-Disaster Mitigation
PGA	Peak Ground Acceleration
PHMSA	Pipeline and Hazardous Materials Safety Administration
PSD's	Public Service Districts
RESA	Regional Educational Service Agency
SERC	State Emergency Response Commission
SHSP	Strategic Highway Safety Plan
SNS	Strategic National Stockpile
USACE	U.S. Army Corps. of Engineers
USDA	U.S. Department of Agriculture
USGS	United States Geological Survey
WCOES	Wetzel County Office of Emergency Services
WOCEMA	Wheeling-Ohio County Emergency Management Agency
WVDEP	West Virginia Department of Environmental Protection
WVDHSEM	West Virginia Division of Homeland Security and Emergency Management
WVDNR	West Virginia Department of Natural Resources
WVDOH	West Virginia Division of Highways
WVDOT	West Virginia Department of Transportation
WVGES	West Virginia Geological and Economic Survey
WVIJDC	West Virginia Infrastructure and Jobs Development Council
WVOES	West Virginia Office of Emergency Services
WVU	West Virginia University

APPENDIX F

REPLACEMENT STRUCTURE VALUE

REPLACEMENT STRUCTURE VALUES

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Building (Sq. feet)	Replacement Value	Content Value	Function Use or Value	Displacement Cost	Occupancy or Capacity
Air Products & Chemicals Inc.			X			6,480	$4,711,279	$21,073,891	$1,538,394	$4,215	5
Allister Ridge (Radio Transmitter)			X			N/A	$158,054	N/A	N/A	N/A	N/A
Arrow Concrete	X					14,500	$1,053,695	$842,956	$1,153,796	$3,161	10
Axiall Corporation			X			N/A	N/A	N/A	N/A	N/A	N/A
Bayer			X			N/A	N/A	N/A	N/A	N/A	N/A
Beagle Hotel					X	N/A	N/A	N/A	N/A	N/A	N/A
Benwood City Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Benwood McMechen Public Library				X		4,000	$462,150	$194,520	$26,342	$72	2
Benwood VFD	X					7,600	$1,016,815	$3,477,192	$1,153,796	$3,161	35
Bethlehem ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Bethlehem Village Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Bishop Donahue HS		X				18,000	$1,725,952	$1,725,952	$395,135	$1,082	75
Blue Racer Midstream			X			N/A	N/A	N/A	N/A	N/A	N/A
Boggs Run VFD	X					1,200	$110,638	$790,271	$384,599	$1,054	12
Bridge Street MS		X				N/A	N/A	N/A	N/A	N/A	N/A
Bridges	X					18,592	$323,239,772	N/A	N/A	N/A	N/A
Bushrod Washington Price House					X	N/A	N/A	N/A	N/A	N/A	N/A
Cabela's			X			N/A	N/A	N/A	N/A	N/A	N/A
Cameron City Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Cameron City Pool			X			N/A	N/A	N/A	N/A	N/A	N/A
Cameron Downtown					X	N/A	N/A	N/A	N/A	N/A	N/A
Cameron ES		X				47,930	$4,595,826	$4,595,826	$2,070,510	$5,673	393
Cameron HS		X				47,129	$4,519,021	$4,519,021	$1,975,677	$5,413	375
Cameron Public Library				X		1,100	$101,998	$159,285	$21,074	$58	N/A
Cameron VFD	X					1,400	$126,443	$1,053,695	$384,599	$1,054	25
Carter Farm					X	N/A	N/A	N/A	N/A	N/A	N/A
Cathedral Parish					X	N/A	N/A	N/A	N/A	N/A	N/A
Center McMechen ES	X					26,955	$2,584,613	$2,584,613	$1,248,628	$3,421	237
Center Wheeling Market					X	N/A	N/A	N/A	N/A	N/A	N/A
Central ES		X				32,543	$3,120,425	$3,120,425	$879,835	$2,411	167
Certainteed Gypsum			X			N/A	N/A	N/A	N/A	N/A	N/A
Clearview Village Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Coen, Mike Logging	X					N/A	N/A	N/A	N/A	N/A	N/A
Conner Run Flyash Dam		X				320,932	$15,217,351	N/A	N/A	N/A	N/A
Consolidation Coal Company			X			N/A	N/A	N/A	N/A	N/A	N/A
Dallas VFD	X					1,800	$166,905	$526,847	$461,518	$1,264	15

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Building (Sq. feet)	Replacement Value	Content Value	Function Use or Value	Displacement Cost	Occupancy or Capacity
Dallison Logging Inc.	X					14,500	$1,053,695	$842,956	$1,153,796	$3,161	10
Dallison Lumber Inc.					X	4,350	$3,161,084	$1,580,542	$5,768,978	$15,805	N/A
Edemar					X	N/A	N/A	N/A	N/A	N/A	N/A
Elm Grove ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Elm Grove Stone Arch Bridge					X	N/A	N/A	N/A	N/A	N/A	N/A
Elm Hill					X	N/A	N/A	N/A	N/A	N/A	N/A
Elmhurst		X				N/A	N/A	N/A	N/A	N/A	N/A
Feay Inn					X	N/A	N/A	N/A	N/A	N/A	N/A
Ferrell-Holt House					X	N/A	N/A	N/A	N/A	N/A	N/A
Fischer-Lasch Farmhouse					X	N/A	N/A	N/A	N/A	N/A	N/A
Fish Creek Covered Bridge	X					N/A	N/A	N/A	N/A	N/A	N/A
Folsom VFD	X					48,000	$657,505	$1,053,695	$105,369	$284	14
Fork Ridge VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Franzheim House					X	N/A	N/A	N/A	N/A	N/A	N/A
General Hydrogen			X			1,040	$1,053,695	$21,073,891	$7,691,970	$21,074	8
Glen Dale City Hall	X					1,800	$246,565	$210,739	$184,397	$505	4
Glen Dale ES		X				25,504	$2,445,482	$2,445,482	$1,248,628	$3,421	237
Glen Dale VFD	X					1,800	$166,905	$790,271	$461,518	$1,264	19
Glendale Airport			X			2,600	$10,536,946	N/A	N/A	N/A	N/A
Good Sherpherd		X				N/A	N/A	N/A	N/A	N/A	N/A
Good, L.S. House					X	N/A	N/A	N/A	N/A	N/A	N/A
Grandview VFD		X				N/A	N/A	N/A	N/A	N/A	N/A
Grave Creek Mound					X	28,646	$2,107,389	N/A	$1,922,993	$5,268	6
Hannibal Locks and Dam	X					33,750	$70,334,112	N/A	N/A	N/A	N/A
Hasting By-Prodcuts (CNG Trans Corp)		X				N/A	$12,418,001	N/A	N/A	N/A	N/A
Hastings Extraction		X				750	$52,685	$210,739	$769,197	$2,107	1
Hazlett, Robert W. House					X	N/A	N/A	N/A	N/A	N/A	N/A
Hilltop Elementary School		X				277,714	$2,657,390	$2,657,390	$1,685,911	$4,619	320
Hundred FD	X					N/A	N/A	N/A	N/A	N/A	N/A
Hundred HS	X					86,000	$8,246,214	$8,246,214	$648,022	$1,775	123
Hundred Public Library					X	600	$556,351	$15,805	$1,923	$5	3
Hundred Senior Building		X				3,000	$79,027	$52,685	N/A	N/A	N/A
Jacksonburg VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Jail & Wardens Building	X					8,860	###########	$241,844	N/A	N/A	N/A
John Marshall HS		X				253,918	$24,347,233	$24,347,233	$7,154,586	$19,602	1358
JP Productions			X			750	$52,685	$52,685	$384,599	$1,054	1
La Belle Iron Works					X	N/A	N/A	N/A	N/A	N/A	N/A
Lanam Foundry Inc.		X				12,900	$937,894	$1,580,542	$3,845,985	$10,537	15

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Building (Sq. feet)	Replacement Value	Content Value	Function Use or Value	Displacement Cost	Occupancy or Capacity
Lang Hess House					X	N/A	N/A	N/A	N/A	N/A	N/A
Lewis Wetzel Nursing Home	X					16,884	$694,198	$526,847	N/A	N/A	N/A
Limestone VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Linsly School		X				N/A	N/A	N/A	N/A	N/A	N/A
List, Henry K. House					X	N/A	N/A	N/A	N/A	N/A	N/A
Long Drain ES		X				42,249	$4,051,096	$4,051,096	$1,817,623	N/A	N/A
Madison ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Magnolia HS		X				54,747	$5,249,482	$5,249,482	$2,823,901	$7,737	536
Marble King Inc.					X	17,400	$1,264,433	$1,053,695	$1,922,993	$5,268	32
Marshal County Airport			X			3,300	$17,385,960	N/A	N/A	N/A	N/A
Marshall County Co-Op Inc.			X			2,000	$145,410	$52,685	$192,299	$527	N/A
Marshall County Courthouse Complex	X					N/A	N/A	N/A	N/A	N/A	N/A
McKinley, Johnson, Camden House					X	N/A	N/A	N/A	N/A	N/A	N/A
McLure, John House					X	N/A	N/A	N/A	N/A	N/A	N/A
McMechen City Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
McMechen Lockmaster Houses					X	N/A	N/A	N/A	N/A	N/A	N/A
McMechen VFD	X					1,200	$110,638	$790,271	$384,599	$1,054	15
McNeely Machine Works Inc.		X				3,600	$261,738	$210,739	$307,679	$843	6
McNinch ES		X				50,939	$4,884,347	$4,884,347	$2,107,389	$5,773	400
Mentor Management			X			N/A	N/A	N/A	N/A	N/A	N/A
Middle Creek ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Mitchell Plant			X			N/A	N/A	N/A	N/A	N/A	N/A
Mobley (Equitable Gas Co.)		X	X			N/A	N/A	N/A	N/A	N/A	N/A
Morris Logging		X				N/A	N/A	N/A	N/A	N/A	N/A
Moundsville City FD	X					6,525	$893,796	$1,053,695	$1,422,488	$3,898	47
Moundsville City Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Moundsville Commercial Historic District					X	N/A	N/A	N/A	N/A	N/A	N/A
Moundsville Daily Echo			X			9,000	$654,344	$210,739	$1,922,993	$5,268	7
Moundsville MS		X				81,663	$7,830,355	$7,830,355	$2,370,813	$6,495	450
Moundsville Police Dept.	X					800	$109,584	$474,163	$526,847	$1,444	18
Moundsville Public Library				X		6,000	$858,568	$973,565	$2,634	$72	3
Moundsville Sewage Plant	X					12,000	$7,375,862	$2,107,389	$1,246,938	$3,416	11
Moundsville State Police	X					2,800	$316,108	$263,424	$337,182	$924	12
Moundsville VFD	X					2,000	$185,450	$1,053,695	$496,579	$1,360	4
Mount Saint Joseph					X	N/A	N/A	N/A	N/A	N/A	N/A
Mountain Craft Shop			X			14,500	$1,053,695	##########	$3,845,985	$10,537	50
New Martinsville Airport	X					1,200	$184,397	$342,451	$105,369	$289	6
New Martinsville Downtown Historic District					X	N/A	N/A	N/A	N/A	N/A	N/A

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Building (Sq. feet)	Replacement Value	Content Value	Function Use or Value	Displacement Cost	Occupancy or Capacity
New Martinsville ES			X			127,800	$12,254,257	$12,254,257	$5,452,869	$14,939	345
New Martinsville FD			X			6,800	$931,466	$1,580,542	$158,054	$421	25
New Martinsville Health Center	X		X			N/A	N/A	N/A	N/A	N/A	N/A
New Martinsville Police Department					X	N/A	N/A	N/A	N/A	N/A	N/A
New Martinsville Public Library		X				9,200	$879,835	$26,342	$1,923	$5	3
North Street Historic District			X			N/A	N/A	N/A	N/A	N/A	N/A
Ogden, H.C. House					X	N/A	N/A	N/A	N/A	N/A	N/A
Ohio Valley Medical Center	X					N/A	N/A	N/A	N/A	N/A	N/A
Olgebay Mansion Museum				X	X	N/A	N/A	N/A	N/A	N/A	N/A
Optiques Ltd.			X			N/A	N/A	N/A	N/A	N/A	N/A
Our Lady of Peace School	X					16,484	$1,580,542	$1,580,542	$1,217,017	$3,334	231
Paden City ES	X					31,320	$3,003,156	$3,003,156	$1,238,091	$3,393	235
Paden City HS	X					50,452	$4,837,651	$4,837,651	$1,064,232	$2,916	202
Paden City Police Department			X			2,400	$179,128	$84,296	$4,636,256	$12,701	30
Paden City Public Library		X				2,500	$239,716	$79,027	$28,845	$79	2
Paden City VFD			X			N/A	N/A	N/A	N/A	N/A	N/A
Peterson Rehab. Hospital and Geriatric Center		X				N/A	N/A	N/A	N/A	N/A	N/A
Pike Island Locks and Dam				X		N/A	N/A	N/A	N/A	N/A	N/A
Pine Grove Health Center	X					N/A	N/A	N/A	N/A	N/A	N/A
Pine Grove Public Library	X					N/A	N/A	N/A	N/A	N/A	N/A
Pine Grove VFD		X				N/A	N/A	N/A	N/A	N/A	N/A
Post Office (New Martinsville)	X	X	X			N/A	N/A	N/A	N/A	N/A	N/A
Post Office (Paden City)		X				1,300	$63,222	$63,222	$461,518	$1,264	7
Post Office (Proctor)	X					3,105	$31,611	$52,685	$576,898	$1,581	6
PW Johnson Memorial Airport	X					12,500	$632,217	$263,424	N/A	N/A	4
Railroads	X					969,422	$18,878,942	N/A	N/A	N/A	N/A
RCS Printing Inc.			X			10,000	$727,049	$73,759	$307,679	$843	6
Reader FD	X					N/A	N/A	N/A	N/A	N/A	N/A
Residential				X		N/A	###########	N/A	N/A	N/A	32,766
Reynolds Memorial Hospital	X					213,192	$32,572,649	$23,181,280	$31,610,837	$86,605	350
Ritchie ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Roads	X					412,303	###########	N/A	N/A	N/A	N/A
Roberts Ridge VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Russell, Charles W. House					X	N/A	N/A	N/A	N/A	N/A	N/A
Saint Joseph VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Sand Hill ES		X				8,734	$837,470	$837,470	$342,451	$938	65
Sand Hill Library				X		1,200	$11,127	$26,342	N/A	N/A	1
Shaw Hall (WLSU)					X	N/A	N/A	N/A	N/A	N/A	N/A

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Building (Sq. feet)	Replacement Value	Content Value	Function Use or Value	Displacement Cost	Occupancy or Capacity
Sheriff's Department	X					N/A	N/A	N/A	N/A	N/A	N/A
Sherrard MS		X				61,860	$5,931,521	$5,931,521	$1,570,005	$4,301	298
Sherrard VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Short Line ES		X				54,756	$5,250,345	$5,250,345	##########	$8,256	174
Silver Hill VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Smithfield VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Sprouse Bulding Products			X			N/A	N/A	N/A	N/A	N/A	N/A
St. Michael Church School		X				N/A	N/A	N/A	N/A	N/A	N/A
St. Vincent De Paul School		X				N/A	N/A	N/A	N/A	N/A	N/A
State Police Dep. (Hundred)	X					N/A	N/A	N/A	N/A	N/A	N/A
State Police Dep. New Martinsville	X					N/A	N/A	N/A	N/A	N/A	N/A
Steenrod ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Steward, David Farm					X	N/A	N/A	N/A	N/A	N/A	N/A
Stone Tavern at Rodney's Point					X	N/A	N/A	N/A	N/A	N/A	N/A
Sts. James & John School		X				17,500	$1,678,009	$1,678,009	$31,611	$866	60
Ten A Coal Co.			X			N/A	N/A	N/A	N/A	N/A	N/A
Tiernan, William M. House					X	N/A	N/A	N/A	N/A	N/A	N/A
Triadelphia MS		X				N/A	N/A	N/A	N/A	N/A	N/A
Triadelphia Town Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Upper Grave No. 1	X					111,052	$16,522,458	N/A	N/A	N/A	N/A
Valley Grove Village Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Valley HS		X				70,037	$6,715,582	$6,715,582	$1,106,379	$3,031	210
Victory A Columbia Gas Tans Cor)			X			N/A	N/A	N/A	N/A	N/A	N/A
Wal Mart			X			N/A	N/A	N/A	N/A	N/A	N/A
War Memorial Buliding					X	8,783	$526,592	$2,950	N/A	N/A	N/A
Warren Distribution			X			N/A	N/A	N/A	N/A	N/A	N/A
Warwood Fire Station					X	N/A	N/A	N/A	N/A	N/A	N/A
Warwood School		X				N/A	N/A	N/A	N/A	N/A	N/A
Washington Lands ES		X				58,116	$5,572,523	$5,572,523	$1,917,724	$5,254	364
Washington Lands VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Wastewater Treatment Plant (South)	X					18,312	$2,273,974	$237,450	N/A	N/A	N/A
Wastewater Treatment Plant Paden City	X					N/A	N/A	N/A	N/A	N/A	N/A
Wastewater Treatment Plant Pine Grove	X					N/A	N/A	N/A	N/A	N/A	N/A
Water Treatment Plant New Martinsville	X					N/A	N/A	N/A	N/A	N/A	N/A
Water Treatment Plant Paden City	X					N/A	N/A	N/A	N/A	N/A	N/A
Wesbanco Arena				X		N/A	N/A	N/A	N/A	N/A	N/A
West Liberty ES		X				N/A	N/A	N/A	N/A	N/A	N/A
West Liberty Presbyterian Church					X	N/A	N/A	N/A	N/A	N/A	N/A

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historical/Other Considerations	Size of Building (Sq. feet)	Replacement Value	Content Value	Function Use or Value	Displacement Cost	Occupancy or Capacity
West Liberty University		X				N/A	N/A	N/A	N/A	N/A	N/A
West Virginia Independence Hall					X	N/A	N/A	N/A	N/A	N/A	N/A
West Virginia Northern Community College					X	N/A	N/A	N/A	N/A	N/A	N/A
West Virginia State Penitentiary					X	N/A	N/A	N/A	N/A	N/A	N/A
Wetzel Co. 4H Camp		X				13,700	$868,222	$60,693	N/A	N/A	N/A
Wetzel County Center for Families		X				30,400	$2,914,941	$2,914,941	$916,714	$2,508	174
Wetzel County Courthouse						N/A	N/A	N/A	N/A	N/A	N/A
Wetzel County Hospital	X					62,300	$9,976,907	$14,965,360	$17,891,734	$48,997	250
Wetzel Publishing Co.			X			40,000	$421,478	$210,739	$769,197	$2,107	
Wheeling B&O Railroad Station					X	N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Central Catholic HS		X				N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Country Club					X	N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Country Day School		X				N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Creek No. 18	X					329,649	$49,045,688	N/A	N/A	N/A	N/A
Wheeling Creek No. 23	X					361,196	$53,739,265	N/A	N/A	N/A	N/A
Wheeling Creek No. 25	X					459,086	$68,332,092	N/A	N/A	N/A	N/A
Wheeling Creek No. 3	X					652,257	$79,502,308	N/A	N/A	N/A	N/A
Wheeling Downs			X			N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Hospital	X					N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Jesuit University		X				N/A	N/A	N/A	N/A	N/A	N/A
Wheeling MS		X				N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Park HS		X				N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Sewer Plant	X					N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Suspension Bridge					X	N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Tunnel				X		N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Water Plant	X					N/A	N/A	N/A	N/A	N/A	N/A
Wheeling-Ohio County City-County Building	X					N/A	N/A	N/A	N/A	N/A	N/A
Wileyville VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Wissmach, Paul Glass Co. Inc.					X	1,450	$105,369	$526,847	$3,845,985	$10,537	25
Woodridge					X	N/A	N/A	N/A	N/A	N/A	N/A
Woods, Robert C. House					X	N/A	N/A	N/A	N/A	N/A	N/A
Woodsdale ES		X				N/A	N/A	N/A	N/A	N/A	N/A

APPENDIX H

LOCAL MITIGATION PLAN REVIEW TOOL

LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction: Marshall, Ohio and Wetzel Counties in West Virginia	**Title of Plan: Regional Hazard Mitigation Plan**	**Date of Plan: December 27, 2016**
Local Point of Contact: Scott Hicks	**Address: 105 Bridge Street Plaza Wheeling, WV 26003**	
Title: Executive Director		
Agency: Belomar Regional Council		
Phone Number: 304-242-1800	**E-Mail: hicks@belomar.org**	

State Reviewer:	**Title:**	**Date:**

FEMA Reviewer:	**Title:**	**Date:**
Date Received in FEMA Region *(insert #)*		
Plan Not Approved		
Plan Approvable Pending Adoption		
Plan Approved		

SECTION 1:
REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))			
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))			
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))			
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))			
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))			
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))			
ELEMENT A: REQUIRED REVISIONS			

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))			
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))			
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))			
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))			
ELEMENT B: REQUIRED REVISIONS			
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))			
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))			
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))			
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))			
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))			
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))			
ELEMENT C: REQUIRED REVISIONS			

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))			
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))			
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))			
ELEMENT D: REQUIRED REVISIONS			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))			
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))			
ELEMENT E: REQUIRED REVISIONS			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS			

SECTION 2:
PLAN ASSESSMENT

INSTRUCTIONS: The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

Plan Strengths and Opportunities for Improvement is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item, and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature, and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

Resources for Implementing Your Approved Plan provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

How does the Plan go above and beyond minimum requirements to document the planning process with respect to:

- *Involvement of stakeholders (elected officials/decision makers, plan implementers, business owners, academic institutions, utility companies, water/sanitation districts, etc.);*
- *Involvement of Planning, Emergency Management, Public Works Departments or other planning agencies (i.e., regional planning councils);*
- *Diverse methods of participation (meetings, surveys, online, etc.); and*
- *Reflective of an open and inclusive public involvement process.*

Element B: Hazard Identification and Risk Assessment

In addition to the requirements listed in the Regulation Checklist, 44 CFR 201.6 Local Mitigation Plans identifies additional elements that should be included as part of a plan's risk assessment. The plan should describe vulnerability in terms of:

1) *A general description of land uses and future development trends within the community so that mitigation options can be considered in future land use decisions;*
2) *The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; and*
3) *A description of potential dollar losses to vulnerable structures, and a description of the methodology used to prepare the estimate.*

How does the Plan go above and beyond minimum requirements to document the Hazard Identification and Risk Assessment with respect to:

- *Use of best available data (flood maps, HAZUS, flood studies) to describe significant hazards;*
- *Communication of risk on people, property, and infrastructure to the public (through tables, charts, maps, photos, etc.);*
- *Incorporation of techniques and methodologies to estimate dollar losses to vulnerable structures;*
- *Incorporation of Risk MAP products (i.e., depth grids, Flood Risk Report, Changes Since Last FIRM, Areas of Mitigation Interest, etc.); and*
- *Identification of any data gaps that can be filled as new data became available.*

Element C: Mitigation Strategy

How does the Plan go above and beyond minimum requirements to document the Mitigation Strategy with respect to:

- *Key problems identified in, and linkages to, the vulnerability assessment;*
- *Serving as a blueprint for reducing potential losses identified in the Hazard Identification and Risk Assessment;*
- *Plan content flow from the risk assessment (problem identification) to goal setting to mitigation action development;*
- *An understanding of mitigation principles (diversity of actions that include structural projects, preventative measures, outreach activities, property protection measures, post-disaster actions, etc);*
- *Specific mitigation actions for each participating jurisdictions that reflects their unique risks and capabilities;*
- *Integration of mitigation actions with existing local authorities, policies, programs, and resources; and*
- *Discussion of existing programs (including the NFIP), plans, and policies that could be used to implement mitigation, as well as document past projects.*

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

How does the Plan go above and beyond minimum requirements to document the 5-year Evaluation and Implementation measures with respect to:

- *Status of previously recommended mitigation actions;*
- *Identification of barriers or obstacles to successful implementation or completion of mitigation actions, along with possible solutions for overcoming risk;*
- *Documentation of annual reviews and committee involvement;*
- *Identification of a lead person to take ownership of, and champion the Plan;*
- *Reducing risks from natural hazards and serving as a guide for decisions makers as they commit resources to reducing the effects of natural hazards;*
- *An approach to evaluating future conditions (i.e. socio-economic, environmental, demographic, change in built environment etc.);*
- *Discussion of how changing conditions and opportunities could impact community resilience in the long term; and*
- *Discussion of how the mitigation goals and actions support the long-term community vision for increased resilience.*

B. Resources for Implementing Your Approved Plan

Ideas may be offered on moving the mitigation plan forward and continuing the relationship with key mitigation stakeholders such as the following:

- *What FEMA assistance (funding) programs are available (for example, Hazard Mitigation Assistance (HMA)) to the jurisdiction(s) to assist with implementing the mitigation actions?*
- *What other Federal programs (National Flood Insurance Program (NFIP), Community Rating System (CRS), Risk MAP, etc.) may provide assistance for mitigation activities?*
- *What publications, technical guidance or other resources are available to the jurisdiction(s) relevant to the identified mitigation actions?*
- *Are there upcoming trainings/workshops (Benefit-Cost Analysis (BCA), HMA, etc.) to assist the jurisdictions(s)?*
- *What mitigation actions can be funded by other Federal agencies (for example, U.S. Forest Service, National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA) Smart Growth, Housing and Urban Development (HUD) Sustainable Communities, etc.) and/or state and local agencies?*

SECTION 3:
MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)

INSTRUCTIONS: For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were 'Met' or 'Not Met,' and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

MULTI-JURISDICTION SUMMARY SHEET												
							Requirements Met (Y/N)					
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
1												
2												
3												
4												
5												
6												
7												
8												
9												

MULTI-JURISDICTION SUMMARY SHEET													
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
10												
11												
12												
13												
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